

GOVERNMENT OF INDIA

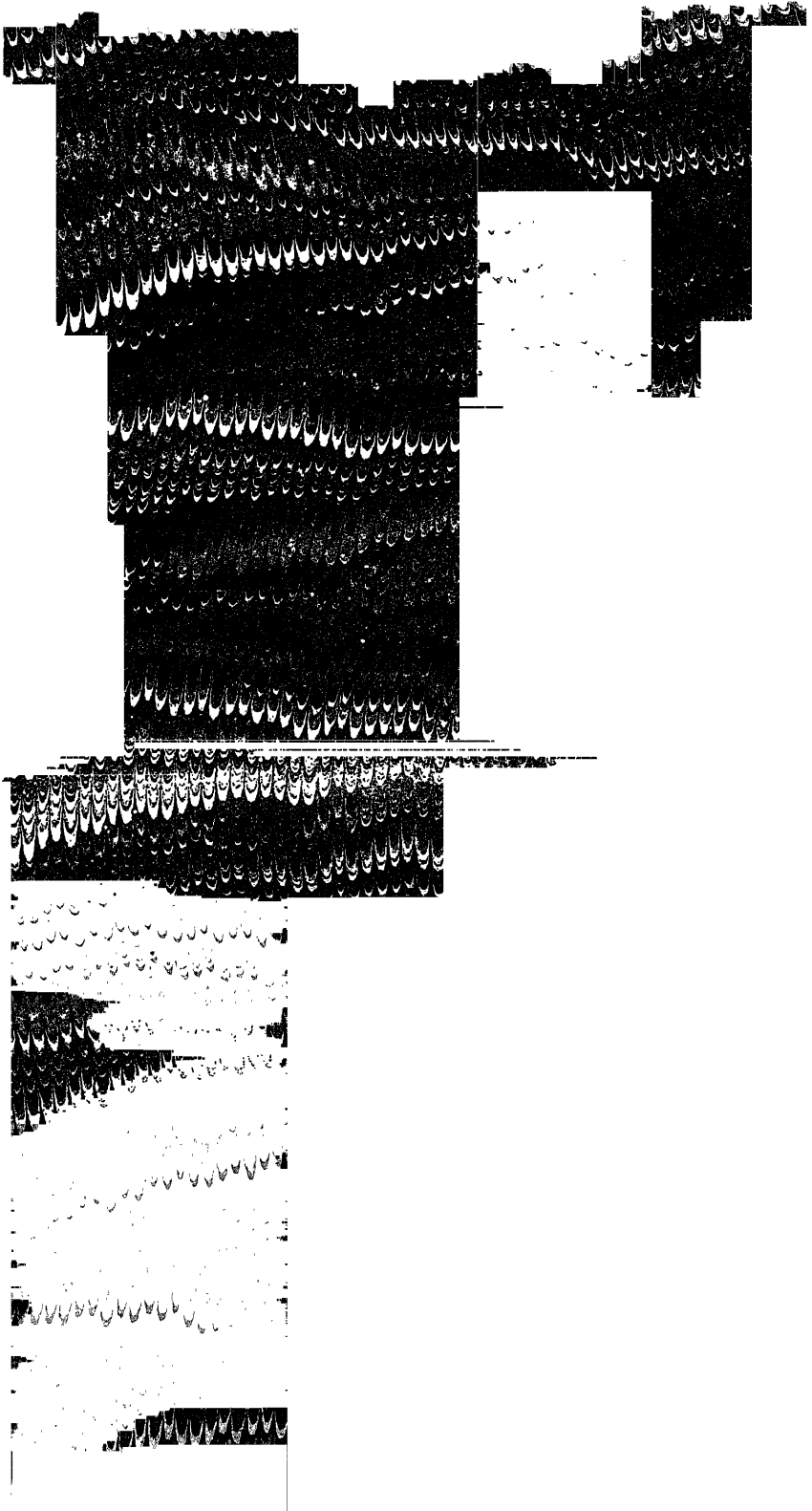
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PROCEEDINGS  
OF THE  
ASIATIC SOCIETY OF BENGAL.

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JANUARY TO DECEMBER,  
1903.

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LIST OF MEMBERS  
OF THE  
ASIATIC SOCIETY OF BENGAL.  
~~ON THE 31ST DECEMBER, 1902.~~

LIST OF OFFICERS AND MEMBERS OF COUNCIL  
OF THE ASIATIC SOCIETY OF BENGAL  
FOR THE YEAR 1902.

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*President :*

The Hon'ble Mr. C. W. Bolton, C.S.I., I.C.S.

*Vice-Presidents :*

H. H. Risley, Esq., B.A., C.I.E., I.C.S.

Colonel T. H. Hendley, C.I.E., I.M.S.

R. D. Oldham, Esq., A.R.S.M., F.G.S.

*Secretary and Treasurer.*

Honorary General Secretary : J. Macfarlane, Esq.

Treasurer : Captain A. F. McArdle, I.M.S., succeeded by  
Mr. C. R. Wilson, M.A., D. Litt.

*Additional Secretaries.*

Philological Secretary : T. Bloch, Esq., Ph.D., succeeded  
by Dr. E. D. Ross.

Natural History Secretary : F. Finn, Esq., B.A., F.Z.S.

Anthropological Secretary : E. A. Gait, Esq., I.C.S.

Joint Philological Secretary : Mahāmāhopādhyāya Hara-  
prasād Shastri, M.A.

*Other Members of Council.*

Major A. Alcock, M.B., LL.D., F.R.S.

J. D. Nimmo, Esq.

C. L. Griesbach, Esq., F.G.S., C.I.E.

A. Pedler, Esq., F.R.S.

J. Bathgate, Esq.

T. H. D. La Touche, Esq., B.A.

Captain L. Rogers, M.D., B.Sc., I.M.S.

Kumar Ramessur Maliah.

Arnold Caddy, Esq., M.D., F.R.C.S.

## LIST OF ORDINARY MEMBERS.

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R. = Resident. N.R. = Non-Resident. A. = Absent. N.S. = Non-Subscriber.  
L.M. = Life Member. F.M. = Foreign Member.

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N.B.—Members who have changed their residence since the list was drawn up are requested to give intimation of such a change to the Honorary General Secretary, in order that the necessary alteration may be made in the subsequent edition. Errors or omissions in the following list should also be communicated to the Honorary General Secretary.

Members who are about to leave India and do not intend to return are particularly requested to notify to the Honorary General Secretary whether it is their desire to continue Members of the Society; otherwise, in accordance with Rule 40 of the Rules, their names will be removed from the list at the expiration of three years from the time of their leaving India.

Date of Election.		
1901 June 5.	R.	Abdur Rahman, A. F. M., Barrister-at-Law. <i>Calcutta.</i>
1894 Sept. 27.	N.R.	Abdul Wali, Maulvic. <i>Ranchi.</i>
1895 May 1.	N.R.	Abdus Salam, Maulvic, M.A. <i>Cuttack.</i>
1888 Feb. 1.	F.M.	Adamson, Lieut.-Col. Charles Henry Ellison, s.c. <i>Europe.</i>
1901 Aug. 7.	N.R.	Adams, Margaret. Baptist Zenana Mission. <i>Delhi.</i>
1888 April 4.	R.	Ahmud, Shams-ul-ulama Maulvic, Arabic Professor, Presidency College. <i>Calcutta.</i>
1888 Feb. 1.	A.	Alcock, Major Alfred William, M.B., LL.D., C.I.E., F.R.S. <i>Europe.</i>
1885 Mar. 4.	L.M.	Ali Bilgrami, Sayid, B.A., A.R.S.M., F.G.S. <i>Hyderabad.</i>
1899 Jan. 4.	N.R.	Ali Hussain Khan, Nawab. <i>Bopal.</i>
1900 Aug. 1.	R.	Allen, C. G. H., I.C.S. <i>Calcutta.</i>
1874 June 3.	R.	Ameer Ali, The Hon'ble Mr. Justice, M.A., C.I.E., Barrister-at-Law, Judge, High Court. <i>Calcutta.</i>
1893 Aug. 31.	A.	Anderson, Major A. R. S., B.A., M.B., I.M.S. <i>Europe.</i>
1884 Sept. 3.	A.	Anderson, J. A. <i>Europe.</i>
1890 July 2.	N.R.	Arnold, Thomas Walker, B.A., M.R.A.S. <i>Lahore.</i>
1870 Feb. 2.	L.M.	Baden-Powell, Baden Henry, M.A., C.I.E. <i>Europe.</i>
1901 Jan. 2.	R.	Badshah, K. J., B.A., I.C.S. <i>Calcutta.</i>
1898 Nov. 2.	N.R.	Bailey, The Revd. Thomas Grahame, M.A., B.D. <i>Wazirabad.</i>
1891 Mar. 4.	N.R.	Baillie, D. C., I.C.S. <i>Ghazipur.</i>
1898 Aug. 3.	N.R.	Bain, Lieut.-Col. D. S.E., I.M.S. <i>Mercara.</i>
1891 April 1.	F.M.	Baker, Edward Charles Stuart. <i>Europe.</i>
1900 Aug. 29.	R.	Baker, The Hon. Mr. E. N., C.S.I., I.C.S. <i>Calcutta.</i>

Date of Election.		
1889 May 1.	R.	Banerji, The Hon. Mr. Justice Guru Das, M.A., D.L., Judge, High Court. <i>Calcutta.</i>
1896 Mar. 4.	N.R.	Banerji, Satish Chandra, M.A. <i>Allahabad.</i>
1869 Dec. 1.	L.M.	Barker, R. A., M.D. <i>Europe.</i>
1885 Nov. 4.	R.	Barman, Damodar Das. <i>Calcutta.</i>
1877 Jan. 17.	N.R.	Barman, H. H. The Maharaja Radha Kishor Dev. <i>Tipperah.</i>
1898 Mar. 2.	N.R.	Barnes, Herbert Charles, I.C.S. <i>Shillong.</i>
1902 May 7.	R.	Bartlett, E. W. J. <i>Calcutta.</i>
1894 Sept. 27.	R.	Basu, Nagendra Natha. <i>Calcutta.</i>
1898 May 4.	R.	Bathgate, J. <i>Calcutta.</i>
1895 July 3.	L.M.	Beatson-Bell, Nicholas Dodd, B.A., I.C.S. <i>Europe.</i>
1876 Nov. 15.	F.M.	Beveridge, Henry, I.C.S. (retired). <i>Europe.</i>
1900 April 4.	N.R.	Bingley, Major A. H., I.S.C. <i>Simla.</i>
1898 Nov. 2.	N.R.	Black, Robert Greenhill. <i>Sylhet.</i>
1859 Aug. 3.	L.M.	Blanford, William Thomas, LL.D., A.R.S.M., F.G.S., F.R.G.S., F.Z.S., F.R.S. <i>Europe.</i>
1897 Feb. 3.	R.	Bloch, Theodor, PH.D. <i>Calcutta.</i>
1893 Feb. 1.	N.R.	Bodding, The Revd. P. O. <i>Rampore Haut.</i>
1885 Mar. 4.	R.	Bolton, The Hon. Mr. Charles Walter, C.S.I., I.C.S. <i>Calcutta.</i>
1895 July 3.	A.	Bonham-Carter, Norman, I.C.S. <i>Europe.</i>
1890 July 2.	A.	Bonnerjee, Womes Chunder, Barrister-at-Law, Middle Temple. <i>Europe.</i>
1897 June 2.	N.R.	Bose, Annada Prasad, M.A. <i>Rajshahi.</i>
1895 Mar. 6.	R.	Bose, Jagadis Chandra, M.A., D.Sc., C.I.E., Bengal Education Service. <i>Calcutta.</i>
1880 Nov. 3.	N.R.	Bose, Pramatha Nath, B.Sc., F.G.S. Geological Survey of India. <i>Shillong.</i>
1895 April 3.	R.	Bourdillon, The Hon. Mr. James Austin, C.S.I., I.C.S. <i>Calcutta.</i>
1860 Mar. 7.	L.M.	Brandis, Sir Dietrich, K.C.I.E., PH.D., F.L.S., F.R.S. <i>Europe.</i>
1900 Aug. 1.	A.	Brown, Major E. Harold, M.D., I.M.S. <i>Europe.</i>
1901 Sept. 25.	R.	Buchanan, Major W. J., I.M.S. <i>Calcutta.</i>
1887 May 4.	R.	Bural, Nobin Chand, Solicitor. <i>Calcutta.</i>
1901 June 5.	R.	Burkill, I. H. <i>Calcutta.</i>
1896 Jan. 8.	N.R.	Burn, Richard, I.C.S. <i>Allahabad.</i>
1900 May 2.	N.R.	Butcher, Flora, M.D. <i>Palwal.</i>
1898 Sept. 30.	A.	Cable, Ernest. <i>Europe.</i>
1896 Jan. 8.	R.	Caddy, Dr. Arnold. <i>Calcutta.</i>
1901 Jan. 2.	A.	Campbell, Duncan. <i>Europe.</i>
1901 Mar. 6.	N.R.	Campbell, W. E. N., I.C.S. <i>Mirzapur.</i>
1895 July 3.	R.	Carlyle, Robert Warrand, C.I.E., I.C.S. <i>Calcutta.</i>
1890 June 4.	R.	Chakravati, Man Mohan, M.A., B.L. Deputy Magistrate. <i>Hooghly.</i>
1901 Mar. 6.	N.R.	Chakravarti, Manmatha Nath. <i>Tamluk, Midnapur.</i>
1902 April 2.	R.	Chandra, Raj Chander, Attorney-at-Law. <i>Calcutta.</i>

Date of Election.		
1901 June 5.	N.R.	Chapman, E. P., I.C.S. <i>Mozuffarpore.</i>
1894 Aug. 1.	N.R.	Chatterjee, M. N. <i>Patiala.</i>
1902 Aug. 27.	R.	Chaudhuri, A., Barrister-at-Law. <i>Calcutta.</i>
1893 Sept. 28.	R.	Chaudhuri, Banawari Lala, B.Sc., Edin. <i>Calcutta.</i>
1899 Jan. 4.	A.	Clemow, Dr. Frank Gerard, M.D., Edin. <i>Europe.</i>
1880 Aug. 26.	F.M.	Clerk, Major-Genl. Malcolm G. <i>Europe.</i>
1889 Nov. 6.	A.	Colville, William Brown. <i>Europe.</i>
1890 Dec. 3.	A.	Connan, William, C.E. <i>Europe.</i>
1898 June 1.	N.R.	Cordier, Dr. Palmyr. <i>Pondicherry.</i>
1876 Mar. 1.	F.M.	Crawford, James, B.A., I.C.S. <i>Europe.</i>
1901 June 5.	A.	Crawford, Major D. G., I.M.S. <i>Europe.</i>
1887 Aug. 25.	R.	Criper, William Risdon, F.C.S., F.L.C., A.R.S.M. <i>Calcutta.</i>
1877 June 6.	A.	Croft, Sir Alfred W., M.A., K.C.I.E. <i>Europe.</i>
1895 July 3.	N.R.	Cumming, John Ghest, I.C.S. <i>Patna.</i>
1898 Aug. 26.	N.R.	Cuppige, Captain W. A., I.S.C. <i>Dibrugarh.</i>
1873 Dec. 3.	F.M.	Dames, Mansel Longworth, I.C.S. <i>Europe.</i>
1896 Mar. 4.	R.	Das-Gupta, Jogendra Nath, B.A., Barrister-at-Law. <i>Calcutta.</i>
1901 Aug. 28.	N.R.	Das, Govinda. <i>Benares.</i>
1865 June 7.	N.R.	Das, Raja Jay Krishna, Bahadur, C.S.I. <i>Moradabad.</i>
1879 April 7.	N.R.	Das, Ram Saran, M.A., Secy., Oudh Commercial Bank, Limited. <i>Fyzabad, Oudh.</i>
1900 July 4.	N.R.	Das, Syam Sunder, B.A. <i>Benares.</i>
1895 Sept. 19.	N.R.	De, Kiran Chandra, B.A., I.C.S. <i>Faridpur.</i>
1902 Mar. 5.	R.	Deb Raja Binoy Krishna, Bahadur. <i>Calcutta.</i>
1895 Dec. 4.	N.R.	Delmerick, Charles Swift. <i>Budaon.</i>
1893 Mar. 1.	A.	Deussen, Dr. Paul. <i>Europe.</i>
1900 May 2.	N.R.	Dev, Raja Satindra, Rai Mahesaya. <i>Bansberia.</i>
1899 Aug. 30.	N.R.	Dev, Raj Kumar Satchidanand, Bahadur. <i>Deogarh, Sambalpur.</i>
1901 June 5.	N.R.	Dey, Nundolal. <i>Tamluk, Midnapur.</i>
1902 Feb. 5.	N.R.	Dixon, F. P., I.C.S. <i>Balasore.</i>
1898 Jan. 5.	F.M.	Dods, W. K. <i>Europe.</i>
1902 July 2.	R.	Doxey, F. <i>Calcutta.</i>
1886 June 2.	R.	Doyle, Patrick, C.E., F.R.A.S., F.R.S.E., F.C.S., <i>Calcutta.</i>
1902 Jan. 8.	N.R.	Drummond, J. R., I.C.S. <i>Shahpur.</i>
1892 Sept. 22.	R.	Drury, Major Francis James, M.B., I.M.S. <i>Calcutta.</i>
1889 Jan. 2.	N.R.	Dudgeon, Gerald Cecil, Holta Tea Co., Ltd. <i>Palam-pur.</i>
1879 Feb. 5.	N.R.	Duthie, J. F., B.A., F.L.S. <i>Saharanpur.</i>
1892 Jan. 6.	N.R.	Dutt, Gerindra Nath. <i>Bankipore.</i>
1877 Aug. 30.	R.	Dutt, Kedar Nath. <i>Calcutta.</i>
1892 Aug. 25.	R.	Dutt, Rai Narsingh Chunder, Bahadur. <i>Howrah.</i>
1900 April 4.	A.	Dyson, Major Herbert Jekyl, F.R.C.S., I.M.S. <i>Europe.</i>



Date of Election.		
1900 July 4.	R.	Earle, A., I.C.S. <i>Calcutta.</i>
1901 June 5.	N.R.	Ede, Francis Joseph, C.E., A.M.I.C.E., F.G.S. <i>Silchar, Cachar.</i>
1871 Dec. 2.	A.	Eliot, Sir John, M.A., K.C.I.E., F.R.S. <i>Europe.</i>
1900 Mar. 7.	A.	Fanshawe, Sir Arthur Upton, C.S.I., K.C.I.E., I.C.S. <i>Europe.</i>
1900 Aug. 29.	A.	Fanshawe, The Hon. Mr. H. C., C.S.I., I.C.S. <i>Europe.</i>
1901 Mar. 6.	N.R.	Fergusson, J. C. <i>Hardoi, Oudh.</i>
1899 Jan. 4.	A.	Ferrar, Lieutenant, M. Lit., I.S.C. <i>Europe.</i>
1894 Dec. 5.	A.	Finn, Frank, B.A., F.Z.S. <i>Europe.</i>
1898 Sept. 30.	R.	Firminger, The Revd. Walter K., M.A. <i>Calcutta.</i>
1892 May 4.	A.	Forrest, G. W., B.A. <i>Europe.</i>
1902 April 2.	N.R.	Fuller, The Hon'ble Mr. J. B., C.I.E. <i>Shillong.</i>
1900 Dec. 5.	N.R.	Gabriel, E. V., I.C.S. <i>Indore.</i>
1893 Jan. 11.	R.	Gait, Edward Albert, I.C.S. <i>Calcutta.</i>
1902 May 7.	N.R.	Garrett, A., I.C.S. <i>Mozuffarpore.</i>
1899 Aug. 30.	R.	Garth, Dr. H. C. <i>Calcutta.</i>
1902 June 4.	N.R.	Ghaznavi, A. A. <i>Mymensing.</i>
1889 Jan. 2.	R.	Ghose, Jogendra Chandra, M.A., B.L. <i>Calcutta.</i>
1902 Feb. 5.	R.	Ghosh, Girish Chander. <i>Calcutta.</i>
1889 Mar. 6.	R.	Ghosha, Bhupendra Sri, B.A., B.L. <i>Calcutta.</i>
1869 Feb. 3.	N.R.	Ghosha, Pratapa Chandra, B.A. <i>Vindyaahal.</i>
1897 Dec. 6.	A.	Godfrey, Captain Stuart, I.S.C. <i>Europe.</i>
1861 Feb. 5.	N.S.	Godwin-Austen, Lient.-Colonel H. H., F.R.S., F.Z.S., F.R.G.S. <i>Europe.</i>
1899 Aug. 2.	R.	Goenka, Roomall. <i>Calcutta.</i>
1896 Nov. 4.	A.	Grant, A. J., I.C.S. <i>Europe.</i>
1897 July 7.	N.R.	Grant, Captain J. W., I.M.S. <i>Muscat.</i>
1876 Nov. 15.	F.M.	Grierson, George Abraham, PH.D., C.I.E., I.C.S. <i>Europe.</i>
1900 Dec. 5.	L.M.	Grieve, J. W. A. <i>Kalimpong.</i>
1901 April 3.	N.R.	Guha, Abhaya Sankara. <i>Shillong.</i>
1898 June 1.	N.R.	Gupta, Bepin Behari. <i>Chota Nagpur.</i>
1898 April 6.	N.R.	Gupta, Krishna Govinda, I.C.S., Barrister-at-Law. <i>Cuttack.</i>
1898 Jan. 5.	N.R.	Gurdon, Captain P. R. T., I.S.C. <i>Cauhati.</i>
1901 Mar. 6.	N.R.	Habibur Rahman Khan, Maulvie. <i>Bhikampur.</i>
1892 Jan. 6.	N.R.	Haig, Captain Wolseley, I.S.C. <i>Berar.</i>
1899 April 5.	F.M.	Hare, Major E. C., I.M.S. <i>Europe.</i>
1901 Jan. 2.	R.	Harris, Lient.-Col. G. F. A., I.M.S. <i>Calcutta.</i>
1884 Mar. 5.	L.M.	Hassan Ali Qadr, Sir Syud, Nawab Bahadur, K.C.I.E. <i>Murshedabad.</i>
1897 Feb. 3.	R.	Hayden, H. H., B.A., B.E., F.G.S., Geological Survey of India. <i>Calcutta.</i>
1875 Mar. 3.	R.	Hendley, Col. Thomas Holbein, C.I.E., I.M.S., Inspector-General of Civil Hospitals, Bengal. <i>Calcutta.</i>

Date of Election.		
1892 Aug. 3.	A.	Hill, Samuel Charles, B.A., B.Sc. <i>Europe.</i>
1872 Dec. 5.	A.	Hoernle, Augustus Frederick Rudolf, PH.D., C.I.E. <i>Europe.</i>
1878 Mar. 6.	A.	Hoey, W., PH.D., I.C.S. (retired). <i>Europe.</i>
1891 July 1.	A.	Holland, Thomas Henry, F.G.S., A.R.C.S. <i>Europe.</i>
1898 Feb. 2.	R.	Hooper, David, F.C.S. <i>Calcutta.</i>
1884 Mar. 5.	N.R.	Hooper, The Hon. Mr. John, B.A., I.C.S. <i>Allahabad.</i>
1901 Dec. 4.	R.	Hossack, Dr. W. C. <i>Calcutta.</i>
1873 Jan. 2.	L.M.	Houstoun, G. L., F.G.S. <i>Europe.</i>
1890 Dec. 3.	N.R.	Hyde, The Revd. Henry Barry, M.A. <i>Madras.</i>
1866 Mar. 7.	F.M.	Irvine, William, I.C.S. (retired). <i>Europe.</i>
1899 April 5.	R.	Kempthorne, H. E. <i>Calcutta.</i>
1882 Mar. 1.	N.R.	Kennedy, Pringle, M.A. <i>Mozuffarpore.</i>
1867 Dec. 4.	A.	King, Sir George, M.B., K.C.I.E., LL.D., F.L.S., F.R.S., I.M.S. (retired). <i>Europe.</i>
1881 Mar. 2.	N.R.	King, Lucas White, B.A., LL.B., C.S.I., I.C.S. <i>Dharamsala.</i>
1896 Aug. 27.	A.	Konstam, Edwin Max, I.C.S. <i>Europe.</i>
1896 July 1.	R.	Küchler, George William, M.A., Bengal Education Service. <i>Calcutta.</i>
1891 Feb. 4.	N.R.	Kupper, Raja Lala Bunbehari. <i>Burdwan.</i>
1899 Aug. 30.	N.R.	Lal, Dr. Mannu. <i>Banda.</i>
1902 Feb. 5.	N.R.	Lal, Lala Shyam. <i>Cawnpore.</i>
1902 Jan. 8.	N.R.	Lall, Parmeshwara. <i>Gya.</i>
1887 May 4.	L.M.	Lanman, Charles R. <i>Europe.</i>
1889 Mar. 6.	R.	La Touche, Thomas Henry Digges, B.A., Geological Survey of India. <i>Calcutta.</i>
1900 Sep. 19.	R.	Law, The Hon. Sir Edward F. G., K.C.M.G., C.S.I. <i>Calcutta.</i>
1902 July 2.	N.R.	Leake, H. M. <i>Dalsing Sarai.</i>
1889 Nov. 6.	R.	Lee, W. A., F.R.M.S. <i>Calcutta.</i>
1900 May. 2.	A.	Leistikow, F. R. <i>Europe.</i>
1902 Oct. 29.	R.	Lewes, A. H. <i>Calcutta.</i>
1889 Feb. 6.	R.	Little, Charles, M.A., Bengal Education Service. <i>Calcutta.</i>
1902 July 2.	R.	Luke, James. <i>Calcutta.</i>
1869 July 7.	F.M.	Lyall, Sir Charles James, M.A., K.C.S.I., C.I.E., LL.D., I.C.S. (retired). <i>Europe.</i>
1870 April 7.	L.M.	Lyman, B. Smith. <i>Europe.</i>
1896 Mar. 4.	N.R.	MacBlaine, Frederick, I.C.S. <i>Purneah.</i>
1902 July 2.	R.	Macdonald, Dr. William Roy. <i>Calcutta.</i>
1901 Aug. 7.	R.	Macfarlane, John, Librarian, Imperial Library. <i>Calcutta.</i>
1893 Jan. 11.	L.M.	MacLagan, E. D., M.A., I.C.S. <i>Multan.</i>
1891 Feb. 4.	A.	Macpherson, Duncan James, M.A., C.I.E., I.C.S. <i>Europe.</i>

Date of Election		
1896 Feb. 5	R.	Macpherson, The Hon'ble Mr. William Charles, C.S.I., I.C.S. <i>Calcutta.</i>
1902 April 2	N.R.	Maddox, Captain R. H., I.M.S. <i>Ranchi.</i>
1893 Aug. 31	N.R.	Mahatha, Purneshwar Narain <i>Mozuffarpore.</i>
1895 Aug. 29	R.	Mahomed Gilani, Shamas-ul-Ulama Shaikh. <i>Calcutta.</i>
1898 Nov. 2	N.R.	Maitra, Akshaya Kumar, B.A., B.L. <i>Rajshahi.</i>
1889 Jan. 2	R.	Maliah, Kumar Ramessur. <i>Howrah.</i>
1893 July 5	A.	Mangos, C. D. <i>Europe.</i>
1901 June 5	R.	Mann, H. H., B.Sc. <i>Calcutta.</i>
1889 Mar. 6	A.	Mann, John, M.A. <i>Europe.</i>
1893 Mar. 1	A.	Marriott, Charles Richardson, I.C.S. <i>Europe.</i>
1902 May 7	N.R.	Marshall, J. H. <i>Simla.</i>
1892 April 6	R.	Maynard, Major F. P., I.M.S. <i>Calcutta.</i>
1901 Aug. 28	R.	McLeod, Norman. <i>Calcutta.</i>
1899 Feb. 1	N.R.	McMahon, Captain A. H., C.S.I., C.I.E., I.S.C. <i>Quetta.</i>
1899 Mar. 1	N.R.	McMinn, C. W., B.A., I.C.S. (retired). <i>Comilla.</i>
1886 Mar. 3	L.M	Metha, Rustomjee Dhunjeebhoy, C.I.E. <i>Calcutta.</i>
1895 July 3	F.M.	Melitus, Paul Gregory, C.I.E., I.C.S. <i>Europe.</i>
1900 Mar. 7	N.R.	Meyer, William Stevenson, I.C.S. <i>Madras.</i>
1900 Jan. 19	R.	Michie, Charles. <i>Calcutta.</i>
1884 Nov. 5	R.	Middlemiss, C. S., B.A., Geological Survey of India. <i>Calcutta.</i>
1884 Sep. 3	R.	Miles, William Harry. <i>Calcutta.</i>
1870 July 6	R.	Miller, Albert Bermingham, B.A., Barrister-at-Law, Official Trustee. <i>Calcutta.</i>
1898 April 6	N.R.	Milne, Captain C. J., I.M.S. <i>Bombay.</i>
1874 May 6	F.M.	Minchin, F. J. V. <i>Europe.</i>
1896 July 1	N.R.	Misra, Rai Lakshmi Sanker, Bahadur. <i>Benares.</i>
1897 Jan. 6	N.R.	Misra, Tulsi Ram. <i>Bareilly.</i>
1899 Mar. 1	R.	Mitra, J. C., M.A., B.L. <i>Calcutta.</i>
1901 Aug. 28	R.	Mitra, Kumar Narendra Nath. <i>Calcutta.</i>
1897 Nov. 3	R.	Mitra, The Hon'ble Mr. Justice Saroda Churan, M.A., B.L. <i>Calcutta.</i>
1901 Aug. 7	N.R.	Molony, E., I.C.S. <i>Ghazipur.</i>
1895 July 3	N.R.	Monohan, Francis John, I.C.S. <i>Shillong.</i>
1898 May 4	R.	Mookerjee, R. N. <i>Calcutta.</i>
1898 Sep. 30	R.	Moore, The Revd. Herbert Octavius, M.A. <i>Calcutta.</i>
1902 July 2	R.	Morshead, L. F., I.C.S. <i>Calcutta.</i>
1894 June 6	N.R.	Muhammad Shibli Nomani, Shams-ul-Ulama Maul- vie, Professor of Arabic in the Muhammadan Oriental College. <i>Aligarh.</i>
1902 April 2	R.	Mukerjee, Jaladhi Chunder. <i>Calcutta.</i>
1901 Jan. 2	N.R.	Mukerjee, Dr. U. C. <i>Birbhoom.</i>
1894 Aug. 30	R.	Mukerjee, Sib Narayan. <i>Uttarpara.</i>
1900 May 2	R.	Mukerji, P. B., B.Sc. <i>Calcutta.</i>
1899 Sept. 29	R.	Mukharji, Jotindra Nath, B.A. <i>Calcutta.</i>
1886 May 5	R.	Mukhopadhyaya, The Hon. Dr. Asutosh, M.A., D.L. F.R.A.S., F.R.S.E. <i>Calcutta.</i>

Date of Election.		
1892 Dec. 7.	R.	Mukhopadhyaya, Panchanana. <i>Calcutta.</i>
1901 April 3.	R.	Mullick, Pramatha Nath. <i>Calcutta.</i>
1901 June 5.	N.R.	Mullick, Ramani Mohan. <i>Meherpur.</i>
1885 June 3.	N.R.	Naemwoollah, Maulvie, Deputy Magistrate. <i>Etawah.</i>
1901 Mar. 6.	N.R.	Nevill, H. R., I.C.S. <i>Naini Tal.</i>
1900 Dec. 5.	R.	Nicoll, John. <i>Calcutta.</i>
1889 Aug. 29.	L.M.	Nimmo, John Duncan. <i>Calcutta.</i>
1901 Feb. 6.	R.	Noetling, Dr. F. <i>Calcutta.</i>
1892 Oct. 27.	F.M.	Norvill, Dr. Frederic H. <i>Europe.</i>
1885 Feb. 4.	N.R.	Nyayaratna, Mahāmāhopādhyāya Mahesa Chandra, C.I.E. <i>Benares.</i>
1899 Jan. 7.	N.R.	O'Brien, P. H., I.C.S. <i>Purneah.</i>
1900 Aug. 29.	A.	O'Dwyer, Michael Francis, B.A., I.C.S. <i>Europe.</i>
1880 Dec. 1.	R.	Oldham, R. D., A.R.S.M., F.G.S., Geological Survey of India. <i>Calcutta.</i>
1887 July 6.	R.	Oung, Moung Hla. <i>Calcutta.</i>
1901 Jan. 2.	N.R.	Pande, Pandit Ramavatar, B.A., I.C.S. <i>Jhansi.</i>
1880 Aug. 4.	L.M.	Pandia, Pandit Mohanlall Vishnulall, F.R.S., <i>Muttra.</i>
1901 Aug. 28.	A.	Panton, E. B. H., I.C.S. <i>Europe.</i>
1880 Jan. 7.	A.	Pargiter, Frederick Eden, B.A., I.C.S. <i>Europe.</i>
1901 June 5.	R.	Parsons, W. <i>Calcutta.</i>
1899 Aug. 2.	N.R.	Peake, C. W., M.A., Bengal Education Service. <i>Bankipur.</i>
1902 Aug. 6.	R.	Peal, H. W. <i>Calcutta.</i>
1873 Aug. 6.	R.	Pedler, Alexander, C.I.E., F.R.S., Director of Public Instruction, Bengal. <i>Calcutta.</i>
1888 June 6.	L.M.	Pennell, Aubray Percival, B.A., Bar-at-Law. <i>Europe.</i>
1881 Aug. 25.	R.	Percival, Hugh Melville, M.A., Bengal Education Service. <i>Calcutta.</i>
1877 Aug. 1.	N.R.	Peters, Lieut.-Colonel C. T., M.B., I.M.S. <i>Bombay.</i>
1889 Nov. 6.	N.R.	Phillott, Major D. C., I.S.C. <i>Kerman, Persia.</i>
1889 Mar. 6.	R.	Prain, Major David, M.A., M.B., LL.D., I.M.S., Royal Botanic Garden. <i>Sibpur.</i>
1889 Mar. 6.	N.R.	Prasad, Hanuman, Raes and Zemindar. <i>Chumar.</i>
1896 Sept. 25.	N.R.	Pringle, A. T. <i>Madras.</i>
1880 April 7.	N.R.	Rai, Bipina Chandra, B.L. <i>Jessore.</i>
1895 Aug. 29.	R.	Rai, Jatindra Nath Chaudhery, M.A., B.L. <i>Barnagar.</i>
1901 June 5.	N.R.	Rai, Lala Lajpat. <i>Lahore.</i>
1900 April 4.	R.	Raleigh, The Hon. Mr. T. <i>Calcutta.</i>
1898 Aug. 3.	N.R.	Ram, Sita, M.A. <i>Bullia.</i>
1890 Mar. 5.	R.	Ray, Prafulla Chandra, D.Sc., Bengal Education Service. <i>Calcutta.</i>
1887 May 4.	R.	Ray, Prasanna Kumar, D.Sc. (Lond. and Edin.), Bengal Education Service. <i>Calcutta.</i>
1884 Mar. 5.	R.	Risley, Herbert Hope, B.A., C.I.E., I.C.S. <i>Calcutta.</i>

Date of Election.		
1900 April 4.	R.	Rogers, Captain Leonard, M.D., B.Sc., M.R.C.P., F.R.C.S., I.M.S. <i>Calcutta.</i>
1900 Aug. 29.	N.R.	Rose, H. A., I.C.S. <i>Lahore.</i>
1901 Dec. 4.	R.	Ross, E. Denison, PH.D. <i>Calcutta.</i>
1896 Dec. 2.	N.R.	Row, B. Suryanaran, B.A. <i>Bellary.</i>
1889 June 5.	N.R.	Roy, Maharaja Girjanath. <i>Dinagepur.</i>
1885 Mar. 4.	R.	Rustomjee, Harjeebhoy Manickjee, C.I.E. <i>Calcutta.</i>
1896 Aug. 27.	N.R.	Samman, Herbert Frederick, I.C.S. <i>Barisal.</i>
1899 June 7.	N.R.	Sarkar, Chandra Kumar. <i>Kowkanik.</i>
1898 Mar. 2.	N.R.	Sarkar, Jadu Nath. <i>Bankipore.</i>
1897 Nov. 3.	A.	Saunders, C. <i>Europe.</i>
1902 Feb. 5.	R.	Schulten, Dr. C. <i>Calcutta.</i>
1900 Dec. 5.	N.R.	Schwaiger, Imre George. <i>Delhi.</i>
1893 Jan. 11.	L.M.	Scindia, His Highness the Maharaja. <i>Gwalior.</i>
1902 Feb. 5.	N.R.	Sen, A. C., I.C.S. <i>Rungpur.</i>
1900 Dec. 5.	N.R.	Sen, Birendra Chandra, I.C.S. <i>Dinajpur.</i>
1901 Aug. 28.	R.	Sen, Upendranath. <i>Calcutta.</i>
1885 April 1.	R.	Sen, Yadu Nath. <i>Calcutta.</i>
1897 Dec. 1.	N.R.	Seth, Mesroby J. <i>Singapore.</i>
1900 Mar. 7.	R.	Shastree, Pandit Yogesha Chandra. <i>Calcutta.</i>
1885 Feb. 4.	R.	Shastri, Mahāmāhopādhyāya Haraprasād, M.A. <i>Calcutta.</i>
1902 Dec. 3.	N.R.	Shastri, Harnarain. <i>Delhi.</i>
1902 Mar. 5.	R.	Shastri, Rajendra Chandra, M.A. <i>Calcutta.</i>
1900 May 2.	R.	Shrager, Adolphe. <i>Calcutta.</i>
1899 May 3.	N.R.	Silberrad, Chas. A., I.C.S. <i>Lalitpur, Bundelkhand.</i>
1893 Mar. 1.	N.R.	Singh, Maharaja Kumara Sirdar Bharat, I.C.S. <i>Ghazipur.</i>
1902 Sep. 24.	R.	Singh, Kumar Birendra Chandra. <i>Calcutta.</i>
1895 Aug. 29.	R.	Singh, Lachmi Narayan, M.A., B.L. <i>Calcutta.</i>
1892 Mar. 2.	L.M.	Singh, The Hon. Raja Ooday Pratab. <i>Binga.</i>
1889 Aug. 29.	N.R.	Singh, H. H. The Maharaja Prabhu Narain, Bahadur. <i>Benares.</i>
1892 Aug. 3.	N.R.	Singh, H. H. The Hon. Mahārāja Pratap Narain. <i>Ajodhya, Oudh.</i>
1895 Aug. 29.	N.R.	Singh, Ram Din. <i>Bankipur.</i>
1889 Nov. 6.	N.R.	Singh, H. H. The Hon. Maharaja Rameshwara, Bahadur. <i>Darbhanga.</i>
1894 Feb. 7.	N.R.	Singh, H. H. Raja Vishwa Nath, Bahadur, Chief of Chhatarpur.
1901 Aug. 7.	R.	Singha, Chandra Narayan. <i>Calcutta.</i>
1894 July 4.	N.R.	Sinha, Kunwar Kushal Pal, M.A. <i>Narkhi P.O., Agra District.</i>
1899 June 7.	N.R.	Sinha, Purnenda Narayan. <i>Bankipur.</i>
1867 April 3.	R.	Sircar, Dr. Mahendra Lal, M.D., C.I.E., D.L. <i>Calcutta.</i>
1897 Jan. 6.	R.	Sircar, Amrita Lal, F.C.S. <i>Calcutta.</i>
1872 Aug. 5.	N.R.	Skrefsrud, The Revd. Laurentius Olavi. <i>Rampore Haut.</i>

Date of Election.		
1901 Dec. 4.	N.R.	Spooner, D. Brainerd. <i>Benares.</i>
1899 Nov. 1.	N.R.	Srivastavya, Lala Shyam Sunder Lal. <i>Pertabgarh.</i>
1898 April 6.	N.R.	Stark, Herbert A., B.A. <i>Cuttack.</i>
1901 Mar. 6.	N.R.	Stebbing, E. P. <i>Dehra Dun.</i>
1891 Aug. 27.	A.	Stein, M. A., PH.D. <i>Europe.</i>
1895 July 5.	A.	Steinberg, Alfred Frederick, I.C.S. <i>Europe.</i>
1899 Aug. 30.	R.	Stephen, St. John, B.A., LL.B. Barrister-at-Law. <i>Calcutta.</i>
1900 Aug. 29.	N.R.	Stephenson, Captain John, I.M.S. <i>Gujrat.</i>
1899 Mar. 1.	R.	Tocher, A. <i>Calcutta.</i>
1868 June 3.	R.	Tagore, The Hon. Maharaja Sir Jotendra Mohun, Bahadur, K.C.S.I. <i>Calcutta.</i>
1898 April 6.	R.	Tagore, Maharaja Prodyat Coomar. <i>Calcutta.</i>
1893 Aug. 31.	N.R.	Tate, G. P. <i>Hongkong.</i>
1878 June 5.	N.R.	Temple, Colonel Richard Carnac, C.I.E., I.S.C. <i>Port Blair.</i>
1875 June 2.	N.R.	Thibaut, Dr. G., Muir Central College. <i>Allahabad.</i>
1898 Nov. 2.	R.	Thornton, Edward, A.R.I.B.A. <i>Calcutta.</i>
1847 June 2.	L.M.	Thuillier, Lieut.-Genl. Sir Henry Edward Landor, Kt., C.S.I., F.R.S., R.A. <i>Europe.</i>
1891 Aug. 27.	N.R.	Thurston, Edgar. <i>Madras.</i>
1871 April 5.	A.	Trefftz, Oscar. <i>Europe.</i>
1861 June 5.	L.M.	Tremlett, James Dyer, M.A., I.C.S. (retired). <i>Europe.</i>
1893 May 3.	N.R.	Vanja, Raja Ram Chandra. <i>Mayurbhanga, District Balasore.</i>
1898 Feb. 2.	R.	Vasu, Amrita Lal. <i>Calcutta.</i>
1900 Aug. 29.	R.	Vaughan, Major J. C., I.M.S. <i>Calcutta.</i>
1890 Feb. 5.	N.R.	Venis, Arthur, M.A., Principal, Sanskrit College. <i>Benares.</i>
1902 May 7.	R.	Vidyabhushan, Jogendra Nath Sen. <i>Calcutta.</i>
1902 June 4.	R.	Vidyabhushan, Pandit Satis Chandra, M.A. <i>Calcutta.</i>
1901 Mar. 6.	N.R.	Vogel, Dr. J. Ph. <i>Lahore.</i>
1894 Sept. 27.	L.M.	Vost, Major William, I.M.S. <i>Jaunpur.</i>
1902 Oct. 29.	R.	Vredenburg, E. <i>Calcutta.</i>
1901 Aug. 7.	A.	Walker, Dr. T. L. <i>Europe.</i>
1900 Jan. 19.	R.	Wallace, David Robb. <i>Calcutta.</i>
1901 June 5.	N.R.	Walsh, E. H., I.C.S. <i>Darjeeling.</i>
1889 Nov. 6.	A.	Walsh, Major John Henry Tull, I.M.S. <i>Europe.</i>
1900 April 4.	R.	Walton, Captain Herbert James, M.B., F.R.C.S., I.M.S. <i>Calcutta.</i>
1865 May 3.	A.	Waterhouse, Major-General James, I.S.C. (retired). <i>Europe.</i>
1874 July 1.	R.	Watt, Sir George, Kt., C.I.E. <i>Calcutta.</i>
1899 Sept. 29.	A.	Weldon, The Most Revd. James Edward Cowell, D.D. <i>Europe.</i>
1902 April 2.	R.	Wheeler, H., I.C.S. <i>Calcutta.</i>

Date of Election.		
1896 Feb. 5.	A.	Williams, Captain Charles E., I.M.S. <i>Europe.</i>
1891 May 6.	R.	Wilson, Charles Robert, M.A., Bengal Education Service. <i>Calcutta.</i>
1899 Aug. 30.	R.	Wood, E. Seymour, F.G.S. <i>Calcutta.</i>
1900 Dec. 5.	R.	Woodman, H. C., I.C.S. <i>Calcutta.</i> [cutta.
1894 Sept. 27.	R.	Woodroffe, John George, Barrister-at-Law. <i>Cal-</i>
1894 Aug. 30.	N.R.	Wright, Henry Nelson, B.A., I.C.S. <i>Allahabad.</i>
1898 July 6.	R.	Wyness, James, C.E. <i>Calcutta.</i>

## SPECIAL HONORARY CENTENARY MEMBERS.

Date of Election.	
1884 Jan. 15.	Dr. Ernst Haeckel, Professor in the University of Jena.
1884 Jan. 15.	Charles Meldrum, Esq., C.M.G., M.A., LL.D., F.R.A.S., F.R.S. <i>Mauritius.</i>
1884 Jan. 15.	Professor A. H. Sayce, Professor of Comp. Philology. <i>Oxford.</i>
1884 Jan. 15.	Professor Emile Senart, Member of the Institute of France. <i>Paris.</i>

## HONORARY MEMBERS.

1848 Feb. 2.	Sir Joseph Dalton Hooker, G.C.S.I., C.B., M.D., D.C.L., LL.D., F.L.S., F.G.S., F.R.G.S., F.R.S. <i>Berkshire.</i>
1875 Nov. 3.	Dr. Otto von Böhtlingk. <i>Leipzig.</i>
1879 June 4.	Professor Edward Bayles Cowell, D.C.L. <i>Cambridge.</i>
1879 June 4.	Dr. Albert Günther, M.A., M.D., PH.D., P.L.S., F.Z.S., F.R.S. <i>Surrey.</i>
1879 June 4.	Dr. Jules Janssen. <i>Paris.</i>
1879 June 4.	Professor P. Regnaud. <i>Lyons.</i>
1881 Dec. 7.	Lord Kelvin, G.C.V.O., D.C.L., LL.D., F.R.S.E., F.R.S. <i>Glasgow.</i>
1883 Feb. 7.	William Thomas Blanford, Esq., LL.D., A.R.S.M., F.G.S., F.R.G.S., F.Z.S., F.R.S. <i>London.</i>
1883 Feb. 7.	Alfred Russell Wallace, Esq., LL.D., D.C.L., F.L.S., F.Z.S., F.R.S. <i>Dorset.</i>
1894 Mar. 7.	Sir George Gabriel Stokes, Bart, M.A., D.C.L., LL.D., D.SC., F.C.P.S., F.R.S.E., F.R.S. <i>Cambridge.</i>
1894 Mar. 7.	Mahāmāhāpodhyāya Chandra Kanta Tarkalankara. <i>Calcutta.</i>
1894 Mar. 7.	Professor Theodor Noeldeke. <i>Strassburg.</i>
1895 June 5.	Lord Rayleigh, M.A., D.C.L., D.SC., LL.D., PH.D., F.R.A.S., F.R.S. <i>Witham, Essex.</i>
1895 June 5.	Lt.-Genl. Sir Richard Strachey, R.E., G.C.S.I., LL.D., F.R.G.S., F.G.S., F.L.S., F.R.S. <i>London.</i>
1895 June 5.	Charles H. Tawney, Esq., M.A., C.I.E. <i>London.</i>
1896 Feb. 5.	Lord Lister, F.R.C.S., D.C.L., M.D., LL.D., D.SC., F.R.S. <i>London.</i>

Date of Election.	
1896 Feb. 5.	Sir Michael Foster, K.C.B., M.A., M.D., D.C.L., LL.D., D.Sc., F.L.S., F.C.S., F.R.S. <i>Cambridge.</i>
1896 Feb. 5.	Professor F. Kielhorn, PH.D., C.I.E. <i>Göttingen.</i>
1896 Feb. 5.	Professor Charles Rockwell Lanmann. <i>Massachusetts, U.S.A.</i>
1899 Feb. 1.	Dr. Augustus Frederick Rudolf Hœrnle, PH.D., C.I.E. <i>Oxford.</i>
1899 Dec. 6.	Professor Edwin Ray Lankester, M.A., LL.D., F.R.S. <i>London.</i>
1899 Dec. 6.	Sir George King, K.C.I.E., M.B., LL.D., F.L.S., F.R.S. <i>London.</i>
1899 Dec. 6.	Professor Edward Burnett Tylor, D.C.L., LL.D., F.R.S. <i>Oxford.</i>
1899 Dec. 6.	Professor Edward Suess, PH.D., For. Mem. R.S. <i>Vienna.</i>
1901 Mar. 6.	Professor J. W. Judd, C.B., LL.D., F.R.S. <i>London.</i>
1902 Nov. 5.	Monsieur R. Zeiller. <i>Paris.</i>

## CORRESPONDING MEMBER.

Date of Election.	
1866 May 7.	Schlagintweit, Dr. Emil. <i>Zweibrücken.</i>

## ASSOCIATE MEMBERS.

Date of Election.	
1874 April 1.	Lafont, The Revd. Father, E., C.I.E., S.J. <i>Calcutta.</i>
1875 Dec. 1.	Bate, The Revd. J. D., M.R.A.S. <i>Kent.</i>
1875 Dec. 1.	Abdul Hai, Maulvie. <i>Calcutta.</i>
1882 June 7.	Giles, Herbert. <i>Europe.</i>
1884 Aug. 6.	Moore, F., F.L.S. <i>Surrey.</i>
1885 Dec. 2.	Führer, Dr. A. <i>Europe.</i>
1886 Dec. 1.	Das, Rai Bahadur Sarat Chandra, C.I.E. <i>Calcutta.</i>
1892 April 6.	Samasrami, Satya Vrata. <i>Calcutta.</i>
1892 Dec. 7.	Brühl, P. J. <i>Sitpur.</i>
1899 April 5.	Sanyal, Rai Bahadur Ram Brahme. <i>Calcutta.</i>
1899 April 5.	Bhandari, Visnu Prasad Raj. <i>Nepal.</i>
1899 Nov. 1.	Francotte, The Revd. Father E., S.J. <i>Calcutta.</i>
1902 June 4.	Francke, The Revd. A. H. <i>Leh.</i>

LIST OF MEMBERS WHO HAVE BEEN ABSENT FROM  
INDIA THREE YEARS AND UPWARDS.\*

\* *Rule 40.*—After the lapse of three years from the date of a member leaving India, if no intimation of his wishes shall in the interval have been received by the Society, his name shall be removed from the List of Members.



The following members will be removed from the next Member List of the Society under the operation of the above Rule:—

Dr. Paul Deussen.  
G. W. Forrest, Esq., B.A.  
Oscar Trefftz, Esq.

## LOSS OF MEMBERS DURING 1902.

### BY RETIREMENT.

Rai Bahadur Chuni Lal Bose, M.B., F.C.S.  
Hirzel Denis de Massenden Carey, Esq., I.C.S.  
Kishori Mohan Chatterjee, Esq.  
R. Paget Dewhurst, Esq., I.C.S.  
Major H. E. Drake-Brockman, I.M.S.  
Major Charles Robert Mortimer Green, F.R.C.S., I.M.S.  
C. L. Griesbach, Esq., C.I.E., F.G.S.  
J. G. Lorimer, Esq., I.C.S.  
Captain W. F. O'Connor, R.A.  
George William Place, Esq., B.A., LL.B., I.C.S.  
Lieut.-Col. G. M. Porter, R.E.  
Captain Bernard Scott, I.S.C.  
W. A. Talbot, Esq.  
Lieut.-Col. Lawrence Austine Waddell, M.B., LL.D., C.I.E., I.M.S.

### BY DEATH.

#### *Ordinary Members.*

John Cockburn, Esq.  
The Hon'ble Sir Griffith Evans, K.C.I.E.  
General James Eardly Gastrell (Life member).  
Captain Andrew Augustine Frayne McArdle, B.A., M.B., I.M.S.  
Babu Karttik Chandra Mittra, M.A., B.L.  
Edw. Emmerson Oliver, Esq., M.I.C.E.  
V. R. Panidsay, Esq.  
The Hon'ble Sir John Woodburn, M.A., K.C.S.I., I.C.S.

#### *Honorary Member.*

Dr. Albrecht Weber.

### BY REMOVAL.

#### *Under Rule 9.*

Lieut.-Col. George Ranking, I.M.S.

#### *Under Rule 40.*

Arthur William Davis, Esq., I.C.S.  
J. W. Muir, Esq., I.C.S.  
Frederick James Rowe, Esq., M.A.

[APPENDIX.]

ABSTRACT STATEMENTS  
OF  
RECEIPTS AND DISBURSEMENTS  
OF THE  
ASIATIC SOCIETY OF BENGAL  
FOR  
THE YEAR 1902.

1902.

# STATEMENT

## Asiatic Society

Dr.

To ESTABLISHMENT.					Rs.	As.	P.	Rs.	As.	P.
Salaries	...	...	...	...	3,711	6	3			
Commission	...	...	...	...	420	5	5			
Pension	...	...	...	...	4	0	0			
								4,135	11	8
To CONTINGENCIES.										
Stationery	...	...	...	...	119	1	0			
Taxes	...	...	...	...	884	4	0			
Postage	...	...	...	...	450	11	3			
Freight	...	...	...	...	60	6	8			
Meeting	...	...	...	...	75	0	0			
Auditor's fee	...	...	...	...	100	0	0			
Registration fee	...	...	...	...	5	0	0			
Petty repairs	...	...	...	...	68	0	3			
Insurance fee	...	...	...	...	625	0	0			
Miscellaneous	...	...	...	...	474	14	8			
								2,862	5	10
To LIBRARY AND COLLECTIONS.										
Books	...	...	...	...	2,755	8	8			
Binding	...	...	...	...	608	12	0			
Catalogue	...	...	...	...	1,150	0	0			
Furniture	...	...	...	...	60	0	0			
								4,574	4	8
To PUBLICATIONS.										
Journal, Part I	...	...	...	...	1,023	5	6			
Journal, Part II	...	...	...	...	964	1	3			
Journal, Part III	...	...	...	...	514	13	1			
Proceedings	...	...	...	...	492	4	6			
								2,994	8	4
To Printing charges of Circulars, Receipt-forms, &c.					...			172	5	6
„ Personal Account (Writes-off and Miscellaneous)					...			217	0	6
To EXTRAORDINARY EXPENDITURE.										
Royal Society's Scientific Catalogue	...	...	...	...	1,037	10	0			
Max Müller Memorial Fund	...	...	...	...	38	6	0			
								1,076	0	0
Balance	...	...	...	...				175,538	11	3
Total Rs.								191,570	15	9

# No 1. of Bengal.

1902.

## Cr.

	Rs.	As.	P.	Rs.	As.	P.
By Balance from last Report	...	...	...	161,059	0	3
BY CASH RECEIPTS.						
Publications sold for cash	...	...	...	247	6	0
Interest on Investments	...	...	...	6,045	8	0
Rent of Rooms on the Society's ground floor	...	...	...	1,375	0	0
Allowance from Government of Bengal for the Publication of Anthropological and Cognate subjects	...	...	...	2,000	0	0
Ditto from Government of Assam	...	...	...	1,000	0	0
Ditto from Colonial Secretary, Straits Settlements, for cost of publications of Sir George King's Materials for a Flora of the Malayan Peninsula	...	...	...	8,750	0	0
Miscellaneous	...	...	...	306	1	0
					19,723	15 0
BY EXTRAORDINARY RECEIPTS.						
Max Müller Memorial Fund	...	...	...	576	0	0
Subscriptions to Royal Society's Scientific Catalogue	...	...	...	510	0	0
					1,086	0 0
BY PERSONAL ACCOUNT.						
Admission fees	...	...	...	928	0	0
Subscriptions	...	...	...	8,398	0	0
Sales on credit	...	...	...	318	14	0
Miscellaneous	...	...	...	57	2	6
					9,702	0 6

Total Rs. ... 191,570 15 9

C. R. WILSON,  
Honorary Secretary and Treasurer,  
Asiatic Society of Bengal.

Examined and found correct.  
MEUGENS, KING & SIMSON,  
Auditors.

## STATEMENT

### *1902. Oriental Publication Fund in Account*

Dr.

To CASH EXPENDITURE.				Rs.	As.	P.	Rs.	As.	P.
Printing charges	...	...	...	4,129	0	6			
Editing charges	...	...	...	2,297	0	0			
Salaries	...	...	...	1,519	8	0			
Freight	...	...	...	47	0	0			
Stationery	...	...	...	106	11	0			
Postage	...	...	...	223	11	3			
Commission on collection	...	...	...	23	4	7			
Contingencies	...	...	...	78	11	0			
				<hr/>			8,424	14	4
To Personal Account (Writes-off and Miscellaneous)			...				9	8	0
Balance			...				11,535	15	7
				<hr/>					
Total Rs.				...			19,970	5	11

## STATEMENT

### *Sanskrit Manuscript Fund in Account*

Dr.

TO CASH EXPENDITURE.				Rs.	As.	P.	Rs.	As.	P.
Salaries	...	...	...	1,169	0	0			
Travelling charges	...	...	...	422	1	0			
Printing	...	...	...	97	5	0			
Postage	...	...	...	0	12	6			
Stationery	...	...	...	8	2	0			
Furniture	...	...	...	353	8	0			
Contingencies	...	...	...	13	2	0			
							2,053	14	6
Balance			...				8,513	13	8
Total Rs.							10,567	12	2

## No. 2.

*with the Asiatic Society of Bengal. 1902.*

## Cr.

			Rs.	As.	P.	Rs.	As.	P.
By Balance from last Report	...	...	...			8,940	5	2
BY CASH RECEIPTS.								
Government allowance	...	...	...	9,000	0	0		
Publications sold for cash	...	...	...	630	15	6		
Advances recovered	...	...	...	71	7	0		
						9,702	6	6
BY PERSONAL ACCOUNT.								
Sales on credit	...	...	...	...	...	1,327	10	3
Total Rs.						19,970	5	11

C. R. WILSON,  
*Honorary Secretary and Treasurer,*  
*Asiatic Society of Bengal.*

Examined and found correct.  
 MEUGENS, KING & SIMSON,  
*Auditors.*

## No. 3.

*with the Asiatic Society of Bengal.*

## Cr.

			Rs.	As.	P.	Rs.	As.	P.
By Balance from last Report	...	...	...			7,845	12	2
BY CASH RECEIPTS.								
Government allowance	...	...	...	3,200	0	0		
Publications sold for cash	...	...	...	15	0	0		
						3,215	0	0
BY PERSONAL ACCOUNT.								
Sales on credit	...	...	...	...	...	7	0	0
Total Rs.						10,567	12	2

C. R. WILSON,  
*Honorary Secretary and Treasurer,*  
*Asiatic Society of Bengal.*

Examined and found correct.  
 MEUGENS, KING & SIMSON,  
*Auditors.*

## STATEMENT

1902.

*Personal*

## Dr.

			Rs.	As.	P.	Rs.	As.	P.
To Balance from last Report	...	...	...			3,101	2	7
To CASH EXPENDITURE.								
Advances for purchase of Sanskrit Manuscripts, &c.	...	...	...			117	8	0
To Asiatic Society	...	...	9,702	0	6			
„ Oriental Publication Fund	...	...	1,327	10	3			
„ Sanskrit Manuscript Fund	...	...	7	0	0			
						11,086	10	9

Total Rs. ... 14,255 5 4

## STATEMENT

*Invest*

## Dr.

			Value.			Cost.		
			Rs.	As.	P.	Rs.	As.	P.
To Balance from last Report	...	...	170,300	0	0	170,539	13	10
„ Cash	...	...	18,000	0	0	17,564	4	9
Total Rs.	...	...	188,300	0	0	188,104	2	7

FUNDS.*	PERMANENT.						TEMPORARY.						TOTAL Cost.		
	Value.			Cost.			Value.			Cost.					
	Rs.	As.	P.	Rs.	As.	P.	Rs.	As.	P.	Rs.	As.	P.	Rs.	As.	P.
Asiatic Society ...	146,900	0	0	146,443	6	8	40,000	0	0	40,321	5	11	186,764	12	7
Trust Fund ...	1,400	0	0	1,339	6	0	...	...	...	...	...	...	1,339	6	0
	148,300	0	0	147,782	12	8	40,000	0	0	40,321	5	11	188,104	2	7

No. 4.

*Account.*

1902.

Cr.

				Rs.	As.	P.	Rs.	As.	P.
By Cash Receipts	...	...	...	...	...	...	10,515	14	9
„ Asiatic Society	...	...	...	217	0	6			
„ Oriental Publication Fund	...	...	...	9	8	0			
							226	8	6

By Balance.	Due to the Society.			Due by the Society.		
	Rs.	As.	P.	Rs.	As.	P.
Members ...	4,078	0	2	141	6	0
Employés ...	30	0	0	350	0	0
Miscellaneous	35	12	8	139	8	9
	4,143	12	10	630	14	9

... 3,512 14 1

Total Rs. ... 14,255 5 4

C. R. WILSON,  
*Honorary Secretary and Treasurer,*  
*Asiatic Society of Bengal.*

Examined and found correct.  
 MEUGENS, KING & SIMSON,  
*Auditors.*

No. 5.

*ment.*

Cr.

				Value.			Cost.		
				Rs.	As.	P.	Rs.	As.	P.
By Balance *	...	...	...	188,300	0	0	188,104	2	7
Total Rs.				188,300	0	0	188,104	2	7

C. R. WILSON,  
*Honorary Secretary and Treasurer,*  
*Asiatic Society of Bengal.*

Examined and found correct.  
 MEUGENS, KING & SIMSON,  
*Auditors.*



## STATEMENT *Trust*

1902.

### Dr.

							Rs. As. P.
To Pension ...	...	...	...	...	...	...	4 0 0
„ Balance ...	...	...	...	...	...	...	1,385 11 10
Total Rs.							1,889 11 10

## STATEMENT *Cash*

### Dr.

							Rs. As. P.	Rs. As. P.
To Balance from last Report ...	...	...	...	...	...	...	5,003 13 0	
RECEIPTS.								
To Asiatic Society	...	...	...	...	...	20,809 15 0		
„ Oriental Publication Fund	...	...	...	...	...	9,702 6 6		
„ Sanskrit Manuscript Fund	...	...	...	...	...	3,215 0 0		
„ Personal Account	...	...	...	...	...	10,515 14 9		
„ Trust Fund ...	...	...	...	...	...	90 0 0		
							44,333 4 3	
Total Rs.							49,337 1 3	

## STATEMENT *Balance*

### Dr.

							Rs. As. P.	Rs. As. P.
To Cash ...	...	...	...	...	...	5,357 3 8		
„ Investments	...	...	...	...	...	188,104 2 7		
„ Personal Account	...	...	...	...	...	3,512 14 1		
							196,974 4 4	
Total Rs.							196,974 4 4	

No. 6.

Fund.

1902.

Cr.

					Rs. As. P.
By Balance from last Report	...	...	...	...	1,299 11 10
„ Interest on Investments	...	...	...	...	90 0 0
Total Rs.					1,389 11 10

C. R. WILSON,  
Honorary Secretary and Treasurer,  
Asiatic Society of Bengal.

Examined and found correct.  
MEUGENS, KING & SIMSON,  
Auditors.

No. 7.

Account.

Cr.

EXPENDITURE.					
					Rs. As. P.
By Asiatic Society	...	...	...	15,815	4 0
„ Oriental Publication Fund	...	...	...	8,424	14 4
„ Sanskrit Manuscript Fund	...	...	...	2,053	14 6
„ Personal Account	...	...	...	117	8 0
„ Investments	...	...	...	17,564	4 9
„ Trust Fund	...	...	...	4	0 0
Balance					43,979 13 7
Total Rs.					5,357 3 8
					49,337 1 3

C. R. WILSON,  
Honorary Secretary and Treasurer,  
Asiatic Society of Bengal.

Examined and found correct.  
MEUGENS, KING & SIMSON,  
Auditors.

No. 8.

Sheet.

Cr.

					Rs. As. P.
By Asiatic Society	...	...	...	175,538	11 3
„ Oriental Publication Fund	...	...	...	11,535	15 7
„ Sanskrit Manuscript Fund	...	...	...	8,513	13 8
„ Trust Fund	...	...	...	1,385	11 10
					196,974 4 4
Total Rs.					196,974 4 4

C. R. WILSON,  
Honorary Secretary and Treasurer,  
Asiatic Society of Bengal.

Examined and found correct.  
MEUGENS, KING & SIMSON,  
Auditors.



### NOTICE.

Foreign Societies who favour the Asiatic Society of Bengal with their publications are informed that they may be sent either to the address of the Society at Calcutta, or to the Agents of the Society in London, Messrs. Luzac & Co., 46, Great Russell Street.

### AVIS.

Des Sociétés Etrangères qui honorent la Société Asiatique de Bengale de ses publications, sont priées de les envoyer ou directement à l'adresse de la Société, 57, Park Street, Calcutta, ou aux Agents de la Société à Londres, Messrs. Luzac et Cie, 46, Great Russell Street.

### ANZEIGE.

Ausländische Gesellschaften welche die Asiatische Gesellschaft von Bengalen mit ihren Publicationen beehren, sind hierdurch ersucht dieselben entweder direct an die Adresse der Gesellschaft, 57, Park Street, Calcutta, oder an deren Agenten in London, Messrs. Luzac & Co., 46, Great Russell Street.



PROCEEDINGS  
OF THE  
ASIATIC SOCIETY OF BENGAL.  
FOR JANUARY & FEBRUARY, 1903.

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The Annual Meeting of the Society was held on Wednesday, the 4th February, 1903, at 9 P.M.

THE HON. MR. C. W. BOLTON, C.S.I., I.C.S., President, in the chair.

The following members were present:—

Mr. J. Bathgate, The Hon. Mr. J. A. Bourdillon, C.S.I., Mr. P. J. Brühl, Mr. I. H. Burkill, Mr. J. N. Das Gupta, Mr. F. Doxey, Mr. E. A. Gait, Lt.-Col. G. W. A. Harris, I.M.S., Mr. H. H. Hayden, Mr. D. Hooper, Dr. Wm. Roy Macdonald, Dr. H. H. Mann, Mr. W. H. Miles, Mr. L. Morshead, The Hon. Dr. Asutosh Mukhopadhyaya, Mr. R. D. Oldham, Mr. H. W. Peal, Captain L. Rogers, I.M.S., Dr. E. D. Ross, Rai Ram Brahma Sanyal Bahadur, Pandit Jogesh Chandra Shastree, Dr. C. Schulten, Mahamahopadhyaya Haraprasad Shastri, Pandit Satis Chandra Vidyabhushan, Mr. C. R. Wilson.

*Visitors*:—Mr. M. Churchill-Shaun, Mr. E. C. Cotes, Mr. B. A. Gupta, Mr. F. J. Norman, Rai Sahib Jaimat Rai, Mr. Tokiwo Yokoi.

According to the Rules of the Society, the President ordered the voting papers to be distributed for the election of officers and members of Council for 1903, and appointed Mr. D. Hooper and Dr. H. H. Mann to be Scrutineers.

The President then called upon the Secretary to read the Annual Report.

## ANNUAL REPORT FOR 1902.

The Council of the Society have the honour to submit the following Report on the state of the Society's affairs during the year ending 31st December, 1902.

### Member List.

There is a steady increase in the list of Ordinary Members.

During the year under review 32 Ordinary Members have been elected and we have lost 26, namely, 14 by withdrawal, 8 by death, 1 by removal under Rule 9, and 3 by removal under Rule 40. The total number of members at the close of 1902 was 334, against 328 for the preceding year: of these 126 were Residents, 126 Non-Residents, 14 Foreign Members, 21 Life Members, 46 Absent from India, and one a Special Non-Subscribing Member, as will be seen from the following table, which also shows the fluctuations in the numbers of Ordinary Members during the past six years:—

YEAR.	PAYING.				NON-PAYING.				GRAND TOTAL.
	Resident.	Non-Resident.	Foreign.	Total.	Life.	Absent.	Special Non-Subscribing.	Total.	
1897 ... ..	106	115	9	230	22	35	1	58	288
1898 ... ..	122	108	11	241	23	35	1	59	300
1899 ... ..	120	119	13	252	21	27	1	49	301
1900 ... ..	116	124	18	258	22	30	1	53	311
1901 ... ..	123	133	13	269	22	36	1	59	323
1902 ... ..	126	126	14	266	21	46	1	68	334

We have to deplore the death of the following Ordinary Members: Mr. John Cockburn, The Hon'ble Sir Griffith Evans, K.C.I.E., General J. E. Gastrell (Life Member), Captain A. F. McArdle, I.M.S., Babu Karttik Chandra Mitra, Mr. E. E. Oliver, M.I.C.E., Mr. V. R. Painsday, and The Hon'ble Sir John Woodburn, K.C.S.I.

There was one death amongst the Honorary Members, *viz.*, Dr. Albrecht Weber. During the year, on the recommendation of the Council, Monsieur R. Zeiller was elected as an Honorary Member in the

place of Dr. Weber. Thus the number of Honorary Members stands at 26.

One Associate Member has been elected during the year, namely, the Revd. A. H. Francke. The number stands at 13.

The lists of Special Honorary Centenary Members and Corresponding Members continue unaltered from last year, the numbers standing at 4 and 1 respectively.

No members compounded for their subscription during the year.

#### **Indian Museum.**

There was only one change amongst the Trustees, caused by the resignation of Mr. W. K. Dods, and the Hon'ble Mr. J. A. Bourdillon, C.S.I., has been appointed to fill the vacant place. The other Trustees who represent the Society are Mr. A. Pedler, F.R.S., Dr. Mahendralal Sircar, C.I.E., Mr. G. W. Kuchler, M.A., and Mr. T. H. Holland, F.G.S.

#### **Finance.**

The Appendix contains the usual Classified Statements showing the accounts of the Asiatic Society.

Under Statement No. 1 will be found the account of receipts and disbursements of the Asiatic Society during the year 1902.

Statement, Nos. 2 and 3 show how the money administered through the Society in the Oriental Publication and Sanskrit Manuscript Funds has been spent during the past year. A fixed allowance of Rs. 750 per month is given by the Government of India to the Oriental Publication Fund and a yearly sum of Rs. 3,200 is paid by the same authority to the credit of the Sanskrit Manuscript Fund.

Statement No. 4 gives an account of monies due by and to the members of this Society.

In Statement No. 5 an account is given of the sums invested in Government Securities and held in deposit by the Bank of Bengal.

Statement No. 6 shows the sum invested in Government Security known as the Trust Fund, the interest of which is applied to the payment of pensions to old servants of the Society.

The cash receipts and expenditure of the Society as well as those of the different funds are summed up in Statement No. 7.

Statement No. 8 exhibits the balance sheet of the different Statements.

The Budget Estimate for 1902 was taken at the following figures :  
Receipts Rs. 18,375, Expenditure Rs. 18,011-4-0 (Ordinary Rs. 16,911-4-0, Extraordinary Rs. 1,100-0-0).

Taking into account only the ordinary items of receipts and expen-



diture for the year 1902, the actual results have been: Receipts Rs. 27,727-6-0, Expenditure Rs. 13,529-4-0.

The Receipts thus show an increase of Rs. 8,352-6-0, while the Expenditure shows a saving of Rs. 3,382 on the Budget Estimate, leaving a balance in favour of the Society, on its ordinary working, of Rs. 14,198-2-0. In addition to this, a sum of Rs. 1,000 has been added to the Reserve Fund on account of entrance fees paid during the year.

There is an increase in Receipts under the heads of "Subscriptions," "Interest on Investments," "Government Allowances," and "Miscellaneous." Subscriptions were estimated at Rs. 7,500, while the actuals were Rs. 7,689-5-0, the excess being due to some of the arrear subscriptions from members having been realized. During the year Temporary Investments were made and there is thus an increase of Rs. 345-8-0 under the head of "Interest on Investments." Owing to a grant of Rs. 8,750 from the Government of the Straits Settlements for the purpose of defraying the cost of publication of Sir George King's Materials for a Flora of the Malayan Peninsula "Government Allowances" show an increase. There is an increase of Rs. 205-1-0 under the head "Miscellaneous." This is due to an advance recovered from the Baptist Mission Press.

The falling-off in the Receipts under the head "Sale of Publications" is due to Messrs. Luzac and Co. not having submitted their Statement of Sales during 1902.

Our expenses have been well within the sanctioned Budget Estimate except in respect of "Contingencies" and "Books." Owing to the payment of Rs. 96 to Messrs. Mackintosh, Burn and Co. for their report on the valuation of the Society's house and site and Rs. 106-10-0 spent in repairing bookcases, there is an increase of Rs. 174-14-8 under the head "Contingencies." "Books" were estimated at Rs. 2,000, whilst the expenditure has been Rs. 2,755-8-8. This is due to the adjustment of Messrs. Luzac and Co.'s account to end of March 1902. There is a very slight increase under the head "Freight."

Owing to the death of our late Collecting Sircar, there is an expenditure of Rs. 4 only under the head "Pension." During the year no payments have been made to the Oriental Gas Co. for lighting. Certain bills were returned to them, as the amounts seemed to be unusually high. The bills have not been re-submitted for payment.

There were three Extraordinary items of expenditure during 1902 under the heads of "Royal Society's Catalogue," "Max Müller Memorial Fund," and "Furniture" not provided for in the Budget. The expenditure on the Royal Society's Catalogue has been Rs. 1,037-10-0, while the receipts under this head received as subscriptions on account of the Central Bureau has been Rs. 510. Rupees 38-6-0 has been spent on account

of the Max Müller Memorial Fund, and a sum of Rs. 60 has been paid to Messrs. Johnston and Hoffmann for preparing an enlarged photograph of the late Mr. E. Blyth for the Society.

There has been an expenditure of Rs. 1,150 under the head "Library Catalogue." Out of Rs. 1,100 budgetted for the Society's Library Catalogue, Rs. 800 has been paid to Mr. H. B. Perie in full settlement of the compiler's remuneration, the remainder has been paid to the assistant who is revising the Catalogue.

The Budget Estimate of probable Ordinary Receipts and Expenditure for 1903 has been fixed as follows: Receipts Rs. 18,500, Expenditure Rs. 16,949-4-0.

On the Receipts side the estimated income under the head "Interest on Investments" has been increased by Rs. 100 on account of the interest on Temporary Investments. "Rent of Rooms" shows an increase. This is due to the Photographic Society of India being charged an increased rent of Rs. 25 per month.

"Sale of Publications" has been reduced by Rs. 100, taking into account the sale of last year.

On the Expenditure side, the changes in last year's estimate are small. "Lighting" has been increased by Rs. 40 to meet gas bills unpaid last year. During last year the servants of the Society have been supplied with cold weather uniforms and to meet this bill an extra sum of Rs. 100 has been budgetted for under the head "Contingencies."

The item of "Postage" has been reduced by Rs. 50, as the expenditure of last year has been smaller than usual.

There will, however, be three Extraordinary items of expenditure to be dealt with during the year 1903. Rupees 1,000 has been budgetted for under the head "Library Catalogue." This includes the pay of the assistant who is revising the Library Catalogue and other expenses that may be incurred in connection therewith. It is contemplated to fit the Society's rooms with electric lights and fans at an approximate cost of Rs. 2,500. As the Council propose to purchase a considerable number of new books for the Society's library, a sum of Rs. 2,000 has been allotted for the purpose in addition to Rs. 2,000 budgetted for under the head "Books." During the past two years comparatively few new books have been purchased for the Library.

## BUDGET ESTIMATE FOR 1903.

## Receipts.

		1902.			1902.			1903.		
		Estimate.			Actuals.			Estimate.		
		Rs.	As.	P.	Rs.	As.	P.	Rs.	As.	P.
Subscriptions	...	7,500	0	0	7,689	5	0	7,500	0	0
Sale of Publications	...	700	0	0	562	8	0	600	0	0
Interest on Investments	...	5,700	0	0	6,045	8	0	5,800	0	0
Rent of Rooms	...	1,375	0	0	1,375	0	0	1,500	0	0
Government Allowances	...	3,000	0	0	11,750	0	0	3,000	0	0
Miscellaneous	...	100	0	0	305	1	0	100	0	0
Total	...	18,375	0	0	27,727	6	0	18,500	0	0

## Expenditure.

		1902.			1902.			1903.		
		Estimate.			Actuals.			Estimate.		
		Rs.	As.	P.	Rs.	As.	P.	Rs.	As.	P.
Salaries	...	3,800	0	0	3,711	6	3	3,800	0	0
Commission	...	425	0	0	420	5	5	425	0	0
Pension	...	52	0	0	4	0	0	.....		
Stationery	...	120	0	0	119	1	0	120	0	0
Lighting	...	60	0	0	.....			100	0	0
Municipal Taxes	...	884	4	0	884	4	0	884	4	0
Postage	...	550	0	0	450	11	3	500	0	0
Freight	...	60	0	0	60	6	8	60	0	0
Meetings	...	80	0	0	75	0	0	80	0	0
Contingencies	...	300	0	0	474	14	8	400	0	0
Books	...	2,000	0	0	2,755	8	8	2,000	0	0
Binding	...	750	0	0	608	12	0	750	0	0
Journal, Part I	...	2,100	0	0	1,023	5	6	2,100	0	0
" " II	...	2,100	0	0	964	1	3	2,100	0	0
" " III	...	2,000	0	0	514	13	1	2,000	0	0
Proceedings	...	600	0	0	492	4	6	600	0	0
Printing circulars, &c.	...	200	0	0	172	5	6	200	0	0
Registration Fee	...	5	0	0	5	0	0	5	0	0
Auditors' Fee	...	100	0	0	100	0	0	100	0	0
Petty Repairs	...	100	0	0	68	0	3	100	0	0
Insurance	...	625	0	0	625	0	0	625	0	0
Total	...	16,911	4	0	13,529	4	0	16,949	4	0

**Extraordinary Expenditure.**

	1902.			1902.			1903.		
	Estimate.			Actuals.			Estimate.		
	Rs.	As.	P.	Rs.	As.	P.	Rs.	As.	P.
Library Catalogue ...	1,100	0	0	1,150	0	0	1,000	0	0
Royal Society's Catalogue	.....			1,037	10	0	.....		
Max Müller Memorial Fund	.....			38	6	0	.....		
Furniture ...	.....			60			.....		
Electric Lights and Fans	.....			.....			2,500	0	0
Books ...	.....			.....			2,000	0	0
Total ...	.....			.....			5,500	0	0

**Agencies.**

Our London Agency is still in the hands of Messrs. Luzac and Co. They have submitted Statement of sales during 1901 and Statement of goods supplied to end of March 1902. £76-8-10, due to them up to the end of March 1902, has been remitted. The value of the publications sent to them during the year amounts to £83-6-6, representing 667 pieces of the *Journal and Proceedings* and Rs. 481, representing 1,005 components of the *Bibliotheca Indica*. From them we have received books and papers of the value of £18-6-9.

Our Continental Agent is Mr. Otto Harrassowitz, to whom we have sent publications valued at £26-8-0 and Rs. 601-12-0, of which £4-6-5 and Rs. 196-7-0 worth have been sold for us. The balance of £54-17-2, due to him to end of June 1902, has been remitted.

**Library.**

The total number of volumes or parts of volumes added to the Library during the year was 2,955, of which 897 were purchased and 2,058 presented or received in exchange for the Society's publications.

As recommended by Council certain periodicals purchased for the Society's Library were discontinued.

On the recommendation of the Library Catalogue Sub-Committee, the new edition of the Society's Library Catalogue, compiled by Mr. H. B. Perie, is being remodelled under the supervision of the General Secretary and it is hoped that the manuscript will be sent to press early this year.

**International Catalogue of Scientific Literature.**

During the year 1902, the work of the Catalogue, the preparation of the Index-slips or cards as required by the International Catalogue Committee has been steadily increasing. Nineteen batches, making a total of 905 slips, were sent to the Director of the Catalogue.

The first copies of the Catalogue, the parts for Chemistry and

Botany, were received during the latter end of September. Of these 73 copies were distributed to subscribers and 6 copies were presented at the request of the Director to the Editors of Indian Journals for review.

Subscriptions have been received and sent to the Director from the Government of Burma and the Kashmir Museum.

The Government of United Provinces of Agra and Oudh have advised the remittance of their subscription, and the Political Agent, Central India, of a part of his subscription direct to London.

#### **Max Müller Memorial Fund.**

The list for subscriptions to the Max Müller Memorial Fund is still open. Rupees 716 has been received, which amount, after deducting sundry expenses, will be remitted.

#### **Proposed Re-organization of the Society.**

In last year's report it was stated that the final consideration of the proposed alterations in the status of the Society was postponed, pending a further report from the Committee. A Meeting was called of the remaining Members of the Committee appointed to consider the proposed re-organization of the Society, but there was no quorum. The Council resolved that the question of re-organizing the Society and extending its operations should stand over until the finances of the Society had been placed on a more settled basis.

#### **Proposed sale of the Society's premises.**

In order to ascertain what sum is likely to be received by the sale of the Society's house and site the Council obtained a report from Messrs. Mackintosh, Burn and Co. on the valuation of the Society's house and site. The report was circulated to the Members of the Sub-Committee and a plan had been lithographed of the premises. The plan with a covering circular was sent to several House Agents, but no reply has been received. The Council have now resolved to abandon the proposal, and it has been decided to fit the Society's rooms with electric lights and fans.

#### **Exchange of Publications.**

During the past year the Council accepted four applications for exchange of publications with other Societies, viz.: (1) from the Royal Botanic Gardens, Peradeniya, the Society's *Journal*, Part II, for their *Annals*; (2) from the Government of Mysore, Geological Department, the Society's *Journal*, Parts I-III, being exchanged for their publications; (3) from the New York Botanical Garden, the Society's *Journal*, Part II, for their *Bulletin*; (4) from the Académie Malgache de Tana-

native, the *Society's Journal*, Parts I-III, and *Proceedings* being exchanged for their publications.

### Secretaries and Treasurer.

Dr. T. Bloch carried on the duties of Philological Secretary and Editor of the *Journal*, Part I, till June when he was absent on leave and Dr. E. D. Ross took charge of the office.

Mr. F. Finn continued Natural History Secretary and Editor of the *Journal*, Part II, till November when he left India on furlough and Captain L. Rogers, I.M.S., kindly agreed to carry on the work.

Mr. E. A. Gait carried on the duties of the Anthropological Secretary and Editor of the *Journal*, Part III, throughout the year.

Mr. J. Macfarlane carried on the duties of General Secretary and Editor of the *Proceedings* throughout the year.

Mr. W. K. Dods resigned the office of Treasurer in March and Captain A. F. McArdle, I.M.S., was appointed. Captain McArdle continued till his death in October when Mr. C. R. Wilson kindly consented to undertake the work.

Mahamahopadhyaya Haraprasad Shastri was in charge of the *Bibliotheca Indica* and the search for Sanskrit manuscripts and carried on the duties of Joint Philological Secretary throughout the year.

Mr. J. H. Elliott continued Assistant Secretary and Librarian throughout the year.

### Publications.

There were published during the year ten numbers of the *Proceedings* (Nos. 10 and 11 of 1901 and Nos. 1-9 of 1902), containing 92 pages of letter-press. Owing to the increase in the number of members the printing of the *Society's Proceedings* was increased to 650 copies for February and 600 copies for other months instead of 575 copies as usual.

Of the *Journal*, Part I, three numbers were published (Extra No. 1 of 1901, and No. 1 and Extra No. 1 of 1902) containing 375 pages of letter-press and 19 plates. The Extra No. 1 of 1901 consists of Dr. A. F. R. Hoernle's report on A Collection of Antiquities from Central Asia, Part II, with 13 facsimile plates issued under separate cover, all of which were paid by the Government of India. The Extra No. 1 of 1902 is Colonel J. Davidson's notes on the *Bashgali* (Kāfir) language and it was printed at the office of the Superintendent of Government Printing, India, free of charge.

Of the *Journal*, Part II, four numbers were published (No. 2 of 1901 and Nos. 1-3 of 1902), containing 208 pages of letter-press and 9 plates. A contribution of Rs. 8,750 was received from the Government of the Straits Settlements for the purpose of defraying the cost of publication.

of Sir George King's Materials for a Flora of the Malayan Peninsula. In thanking the Colonial Government, the Council forwarded 30 copies of the Society's *Journal* from 1889-1901 containing the earlier numbers of the Flora and promised the same number of the future issues. The Council further proposed to add to the title-page of the later issues of the *Journal* the following words "Published with the assistance of His Excellency the Governor of the Straits Settlements."

Of the *Journal*, Part III, three numbers were published (No. 2 of 1901 and Nos. 1-2 of 1902) containing 137 pages of letter-press and 7 plates. In connection with the proposed discontinuance of the grant of Rs. 1,000 per year for *Journal*, Part III, from the Assam Administration, the Secretary to the Chief Commissioner of Assam was furnished with a report showing the work done and the necessity for the continuance of the grant subject to a further consideration of the question five years hence. On a note by Mr. E. A. Gait, the Anthropological Secretary, relative to contributions to Part III, of the Society's *Journal*, the Council agreed to have short notes on Anthropological subjects published as a supplement to Part III, of the *Journal* and they further authorised the addition of a similar supplement to other parts of the *Journal*.

#### Proceedings.

The papers and abstracts published in the *Proceedings* are, some of them at least very interesting. The proceedings serve as a vehicle for the ready circulation of interesting discoveries made by busy men who cannot write long papers for the *Journal* and do not wish to keep back information which might be useful. Babu Manmohan Rāya's paper on the Rajavaṇṣis and Cochs removes a common notion that these are one and the same caste. The writer proves that these castes belong to two distinct races of men; the Rajavaṇṣis are of Mongolian while the Cochs are of Dravidian descent. Babu Satish Chandra Acharya's paper on the Licchavi race of ancient India attempts to prove that even 2,400 years ago Mongolian tribes selling in India passed as Kshatriyas. Mahamahopadhyaya Haraprasad Shastri's paper on the Magi shows that the ancient sacerdotal caste of the Magi in Persia settled in India from time to time and introduced astrology and necromancy in the country and that their descendants are still to be found all over India exercising the profession of astrologer passing as brahmans of an inferior quality. The same writer has another paper on the organization of the caste system in Bengal in the thirteenth century by Ballala Sen belonging to the last Hindu dynasty of Bengal. The Rājā from political reasons degraded the Suvarnavanikas and raised the Kaivarttas in the hierarchy of the caste system.

### Journal, Part I.

In the Philological Section of the Society's *Journal* three numbers have been published, covering altogether 357 pages of letter-press; exclusive of four separate plates. Besides these an extra number of Vol. LXX, Part I, has been issued, containing plates illustrating Dr. Hoernle's Report on Central Asian Antiquities.

Materials for another number are ready, but the delays of the printers and the fact that some of the contributors are resident in England, have made it impossible to publish a second number of Part I during 1902. It is a moot question whether it would not be more satisfactory from the points of view both of accuracy and expedition, if articles by home residents, and these include quite half the contributions to the Society's *Journal*, could be printed at home. That is to say: a paper received from England having been sanctioned in Calcutta should be sent back to the author to print, correct, and forward to the Philological Secretary, ready for incorporation with the rest of the number. The most important philological contribution made during the past year was a study of the Bashgali language by Colonel J. Davidson, C.B. Bashgali is one of the many dialects of Kafiristan. These notes consist of altogether 195 pages. The first 66 are devoted to an account of the grammar of this dialect, which present great difficulties, and in many points seems to defy analysis. Following this is a collection of upwards of 1,750 short sentences in English and Bashgali, which not merely form very valuable material for travellers who may be in need of using that language but will also doubtless be of the utmost interest to philologists. In the *Journal* itself we have a most interesting continuation of Dr. Hoernle's report on the British collection of Central Asia. Herein he deals with every aspect of the manuscripts of this remarkable collection. Many of these manuscripts still remain to be deciphered. Dr. Hoernle has, however, by patient research been able to decipher the alphabet of certain documents of which the language yet remains to be identified. The Revd. T. Grabame Bailey, of Wazirabad, furnishes some interesting specimens of the secret vocabulary employed by the Cāhrās, a tribe of professional thieves, who apparently while using ordinary Punjabi introduce private words and slang expressions where there is need for secrecy. Mrs. Francke has contributed a translation of a Tibetan document relating to the history of Ladakh which completes a former series of translations and texts contributed to this *Journal* on the same subject. There were several other papers of interest published during the year.

### Journal, Part II.

During the last year four numbers of Part II of the Society's



Journal have been issued containing a number of important and interesting papers, botany, zoology and general subjects being all well represented.

Among the botanical papers are included a further important contribution by Sir George King of Materials for a Flora of the Malayan Peninsula, which carries the work on to the end of the Calycifloræ, eight orders being included and eighteen new species described. Some new species of Orchidæ from North-West and Central India have been described by Mr. J. F. Duthie and a new Indian Dendrobium by Major Prain, I.M.S. An important paper entitled On the Variation of the Flower of *Ranunculus Arvensis* has been contributed by Mr. I. H. Burkill, based on the laborious examination of over 6,000 flowers, curves illustrating the variations of the different parts being worked out, and he finds that the sepals vary least, then the petals, then the carpels, while the stamens vary most; so that the variation of this flower is broadly similar to what is seen in a general view of the whole Phanerogamic Sub-Kingdom.

The Zoological series contain a variety of papers, among which the following may be mentioned: a list of Butterflies of Hong-Kong and Southern China by the late Lionel de Nicéville, the last contribution to science of that hard-working and gifted naturalist and some new species of Hymenoptera, by Major C. G. Nurse. Mr. F. Finn has contributed several interesting papers on variations in Indian Birds, illustrated by five plates, on hybrids between the Guinea Fowl and the Common Fowl and on specimens of two Mauritian Birds. An interesting series of notes on Animals in the Alipore Zoological Gardens have been contributed by the Superintendent of the Garden, Rai R. B. Sanyal Bahadur, including the subjects of Telegony and Melanic species of the Common Palm Squirrel. A paper on A Collection of Birds from Upper Burma, by Lieut. H. Wood and F. Finn, includes a description of two species illustrated by plate which had not previously been found among the Indian fauna, while several very rare birds are in the collection, which has nearly all been presented by Lieut. Wood to the Indian Museum. Major J. Manners-Smith has contributed a paper on Wolf Hybrids in Gilgit. Lastly, Dr. Harold H. Mann has presented an interesting note on the life history of the insect known popularly as the mosquito blight which causes such extensive damage on tea garden, with regard to which he concludes that the whole life history is spent on the tea bushes and not partly on other trees in the jungle close by as previously thought, a very important discovery from the practical point of view.

Among the general papers is an important one entitled Studies in the Chemistry and Physiology of the Tea Leaf, also by Dr. Mann,

in which he shows that the most important agent in producing the flavouring of tea is an enzyme, and that this materially increases during the process of withering, while the largest amount is found in the tip leaves, which make the best tea, and that the amount of phosphates in the soil increases the amount of enzyme and the quality of the tea; all highly important points. Another very interesting paper in this section is one on Tidal periodicity in the Earthquakes of Assam by Mr. R. D. Oldham, Superintendent, Geological Survey of India, in which he considers the effect of the tidal stresses set up by the attraction of the sun on the time of occurrence of earthquakes recorded in Assam since the great one of 1897, and he concludes that there is such a relationship.

Altogether the year has been a good one in this section, both the number and the variety of the papers having maintained a high level.

### Journal, Part III.

In all, three numbers of this part of the Journal, containing ten papers, were issued during the year, *viz.* : No. 2 for 1901, and Nos. 1 and 2 for 1902. The first of these numbers contains a paper by Mr. T. H. Holland, F.G.S., on the Coorgs and Yeruvas, in which the affinities of the two tribes are discussed on an anthropometrical basis. Apart from the fact that the Coorgs are shown to differ in a very marked degree from their Dravidian neighbours, this paper contains an interesting discussion on the manner of applying in practice the results obtained from anthropometry.

Amongst other papers may be mentioned Mr. Friend-Pereira's account of the "Marriage Customs of the Khonds," the "Folklore of the Kolhān," by Mr. C. H. Bompas, I.C.S., and "Some Notes on the Rājvaṃṇi Caste" by Babu Monmohan Roy. The last mentioned paper offers an explanation of the divergent views that have been expressed regarding the origin of the Rājvaṃṇis of North Bengal and of the Koch and other tribes in their neighbourhood. It appears that the original Rājvaṃṇi was a Dravidian, but that the term has also been assumed by the Mongoloid Koch, and that in some parts the assumption of the name has been accompanied by intermarriage between the two groups. It has recently been arranged to add a supplement to this part of the Journal for the publication of miscellaneous notes on anthropological subjects.

### Coins.

16 coins were presented to the Society by the Governments of Bombay, Madras, United Provinces of Agra and Oudh during the year under review. Of these 2 are gold, 12 silver, and 2 copper coins. The

gold coins comprise: a coin of Shri Pratap Harihara (Vijayanagar Dynasty), found in the Ahmednagar collectorate and a half pagoda of Shri Pratap Deva Raya of the first Vijayanagar Dynasty found in the Poona District. The remaining are not of much importance.

The question of the proposed amalgamation of the two collections of coins now held separately by the Indian Museum and the Asiatic Society made by the Hon'ble Mr. J. A. Bourdillon was referred to the Trustees of the Indian Museum. The Trustees have asked the Council the probable purchased price of the collections of coins belonging to the Society and Dr. Bloch has undertaken to make the valuation.

### Bibliotheca Indica.

Twenty-five fasciculi were published during the Calendar year 1902; of these two were in the Arabic-Persian, and the rest in the Sanskrit Series. The cost of the year's publication came up to Rs. 6,426-0-6. The average cost of fasciculus being Rs. 257; Rs. 92 in editing-fees and Rs. 165 in printing charges.

Three new works have been commenced: two in the Sanskrit Series and one in the Arabic-Persian.

1. Bodhicaryyavātāratikā by Prajnākanamati. Since the discovery of Buddhism and Buddhist literature in Nepal by Brian Hodgson in the early part of the nineteenth century, Bodhicaryyāvātāra by Cāntinātha has engaged the attention of Oriental scholars all over the world. It was described at length by Dr. Rājendralāla Mitra in his Nepalese Buddhist Literature and published by Professor Minaev at St. Petersburg. It is the best handbook of the later Mahāyāna School, written in standard Sanskrit and in an engaging style, but without a commentary it could not be thoroughly studied and properly translated. A search was instituted by Mahāmahopādhyāya Haraprasād Shāstri and his efforts was completely successful by the discovery of a complete copy of Prajnākara's Commentary, and another copy of a portion of it, in 1895. In 1898 the same Pandit found a tippana in the Darbar Library, Nepal. Professor La Vallée Poussin of Ghent found a copy of the Tibetan translation of the work in Europe and undertook to bring out an edition of the Text and Commentary filling up the gaps and lacunæ in the commentary from the Tibetan. The first fasciculus of his work was published in 1902.

2. Çatasāhasrikā Prajnāpāramita reported to have been brought up from the Nether world by Nāgārjuna. This too was discovered by Brian Hodgson in Nepal. A Tibetan version of it was published in the *Bibliotheca Indica* by Babu Pratāpa Çandra Ghōṣa. The work is in prose, but, if measured in verses of 32 letters each, its extent will come to

one hundred thousand verses, hence it is called the *Çatasāhasrikā*. It is full of repetitions like many great Buddhist works. After finishing the publication of the Tibetan version, Babu Pratāpa Çandra offered to edit the Sanskrit original and the permission was gladly accorded by the Council. In the very first year the learned editor has pushed the work through four fasciculi.

3. The *Riyazu-s-Salātin*, a history of Bengal, by Ghulan Husain Salin is a well-known work written in the eighteenth century at Malda. The English translation of the work has been entrusted to Maulvi Abdus Salan, M.A., Bengal Provincial Service, and he has published one fasciculus during the year under review.

#### Search for Sanskrit Manuscripts.

The search for manuscripts was conducted by Mahamahopadhyaya Haraprasad Shastri during the year under review. About 200 manuscripts were collected and more than 200 notices of rare manuscripts made in various districts of the Provinces of Bengal. The Shastri undertook three trips to Nadia, one to Burdwan, and one to Puri. His assistants, the travelling Pandits, worked in the districts of Puri and Birbhum, visiting other districts too on occasions. The search in the city of Navadvipa is very nearly complete. Three or four private collections only remain to be examined. The examination resulted in the discovery of about 30 manuscripts which were known only from quotations.

The Report having been read and some copies having been distributed, the President invited the meeting to consider it at their leisure.

The President announced that only one essay had been received in competition for the Elliott Prize for Scientific Research for the year 1902, sent to Mr. Pedler, one of the Trustees, for report, and that the result had not yet been received by the Society.

The President also announced that the Barclay Memorial Medal for the year 1902 had been offered to Major Ronald Ross, F.R.C.S., C.B., C.I.E., F.R.S., I.M.S. (Retired).

The President then addressed the meeting.

#### ANNUAL ADDRESS, 1902.

GENTLEMEN,

It is not incumbent on your President to deliver an Address on the termination of his first year of office, and, following precedent, I

might have refrained from preparing one on this occasion. I have been loath, however, to meet you this evening without supplementing with some remarks the Annual Report which lies before you, and would ask you to accept these remarks indulgently, as the fullest contribution which official duties have permitted me to make to the proceedings to-night. On reference to some of the Presidential Addresses of the past, I am regretfully conscious of the unfavourable comparison which mine may evoke, but it would have been beyond the power of myself, and of those to whom I could look for assistance, to undertake in the present season a full review of all that has been done not only in India, but elsewhere also, and not only by this Society, but also by other Societies, by *Savants* and by Departments of the Government, in the branches of literature and science with which, by its aims and constitution, our Society is concerned. Such a task must be postponed to a later occasion.

I would, in the first place, speak to you on what I would term homely matters, relating to our building, its internal arrangements, and the improvements which are desirable. The Annual Report alludes to the proposal which has been under consideration for the disposal of our premises. It was hoped by the members with whom the proposal originated that a sufficient sum would be obtained for the acquisition of a site and the erection of a new building, with residential quarters for the Secretary, and that there might even be an adequate balance to provide for a paid Secretaryship. These anticipations have, however, proved too sanguine. No offer has, in fact, been made for the purchase of the premises, and it seems clear that they could not be sold at a price which would justify our parting with them for accommodation elsewhere. The proposal must, therefore, be abandoned. Nor is this, in my opinion, much to be regretted. Our building is old, but it provides us with this spacious hall for our meetings and it admits of improvement. That which has specially suggested itself to me is the raising of the floor of the ground rooms and passage, which now show signs of constant dampness and cannot, for that reason, be fully used. The matter is under enquiry, and I trust that professional opinion will be in favour of the work, and that it may be carried out at moderate cost. An improvement of the drainage outside may simultaneously be effected. The arrangements for the lighting of our rooms and for punkahs should also be brought up-to-date, by the introduction of electric lights and fans, and provision for this change has been made in the Budget for the ensuing year. The gas has now to be supplemented by lamps, which are an inconvenience, and the antiquated hanging punkahs should give place to the more convenient electric fans now in general use. Our Library

demands much attention. The space now available in the almirahs is deficient, two rows of books being found on many of the shelves, and a thorough re-arrangement of the volumes should be effected, after the removal of such as may be dispensed with, and the provision of additional almirahs, for which space would be found in the improved rooms on the groundfloor. We are fortunate in having as our General Secretary, Mr. Macfarlane, the Librarian of the Imperial Library, whose advice and assistance in this matter will be of great advantage to the Council. He has already undertaken the revision of the Catalogue, and will advise as to the purchase of new books, in regard to which too little has been done in recent years. The expenditure to be incurred on this and on the improvements in the building will be well within our financial capacity.

The proposal to modify the status of the Society, which was mentioned in the last Annual Report, has been indefinitely postponed, and may be regarded as abandoned, by a resolution of the Council that it should stand over until the finances of the Society have been placed on a more settled basis. It erred, in my opinion, in seeking to give too scientific a character to the Society, and to alter its name of Asiatic Society, which so well recalls the objects of its foundation and its great achievements in the cause of Oriental research. What the history of the Society has been I would here briefly notice. Founded in 1784, on the initiation of Sir William Jones, it is among the oldest learned Societies of the world. It has published, first, in its volumes of Asiatic Researches, and subsequently in its Journal, innumerable papers of the highest value on the literature, language, history, archæology, and ethnography of India and other Asiatic countries, and on the natural sciences, including astronomy, meteorology, geology, zoology, and botany. It commenced early the formation of a Library and a Museum, giving the lead by more than one generation to the Government in its Natural History collection, including geological specimens. That collection, for many years in charge of the distinguished naturalist Blyth in its zoological section, was eventually made over to the Government in 1866 and converted into the Imperial Museum, now located in the great building in Chowringhee. The Library remains with us, and now consists of over 40,000 volumes, of which about 11,000 are manuscripts. The publication of Oriental works was systematically undertaken by the Society in 1835, and its *Bibliotheca Indica* Series of publications has since included a very large number of original texts and of translations of the leading works of Brahmanic literature and of works in Arabic and Persian. The conservation of Sanskrit Manuscripts has been another important work of the Society, and both in this and in the *Bibliotheca Indica* section it has received

liberal pecuniary aid from the Government. The Society has also a large collection of coins of great interest to the numismatist. The transfer of this collection to the Indian Museum has been suggested, but it is a question which will demand thorough consideration. Credit is especially due to the Society for the discovery of keys to the ancient Indian alphabets, for the early investigations in the languages of Ancient India, including Pali, for the light which has been thrown on the history of India and of the adjacent countries on the North-West by the labours of the great numismatists who have been among its members, and for the development of the study of the Indian vernaculars.

This, gentlemen, is the brief record of the Society's work. It is a record on which we may well look with pride, and which the world of learning and of science will acknowledge to be worthy of the aspirations of the distinguished men to whom the Society owes its birth. Have we cause to fear that the Society has not still before it a long career of usefulness on its present basis? I think not. The era of great discoveries in India itself may have passed. No undiscovered Asoka pillars, Buddhist Topes and Buddhist caves, no undeciphered inscriptions and coins of an unknown language and an unknown epoch, and no great unpublished work in the Sanskrit and Semitic classics may remain to win for antiquarians and scholars the reputation of a William Jones, a Horace Hayman Wilson, a James Prinsep, an Alexander Cunningham and a Blochmann, to mention but a few of our distinguished past members, but a large field is yet open for valuable, if minor, work in the exploration of great ruins and historical sites, and in the editing and translating of unpublished works of interest and repute. And discoveries, though not so great as in the past, will doubtless be made in various parts of India. Beyond India, Central Asia and Mongolia, the ancient realm of Jenghis Khan and Tamerlane, now opened by the construction of the great Russian railway, present an immense region for research; and the ruins of Cambodia, notably the ancient city of Angkor, are already engaging the attention of the French Oriental Society of Cochin-China, to whose Congress last December our members were courteously invited. Our Journals have been always open to papers relating to Asiatic countries other than India, and not a few such contributions will be found in their pages.

In archæology, philology, and anthropology, in particular, much remains to be done in India. The conservation of ancient monuments is an organized department of the Government, and Archæological Surveyors are attached to the Provinces. Archæological enquiry is a special duty of these gentlemen, but there is still room for private workers in the

same field, and they should not be discouraged. Their collaboration will be of value, and they may find reasons, from time to time, for differing from the official archaeologists. There is always much scope for controversy, and our Journals may be enlivened by rival contributions. They are not wanting in evidence that the antiquarian and the philologist may often be assigned a place in the *genus irritabile* to which the poet is proverbially ascribed. I would specially invite officers employed in land settlements and surveys, as some have, indeed, already done, to notice antiquities, shrines and strange local observances which they may find in the course of their operations. Philology is also receiving much enlightened help from the Government. The deputation of Dr. Grierson to prepare a Linguistic Survey of India gives promise of great development in philological studies. His labours cannot but attract attention to the numerous languages and dialects of India, and enlist the co-operation of many in the same fruitful field for long years to come. We are already indebted to him, and his former co-adjutor, Dr. Hoernle, for much advancement in the knowledge of the Bihari vernaculars. Another important work carried out at the expense of the Government has now been completed, and will, I trust, be soon published—the compilation of a Tibetan-English Dictionary, with Sanskrit Synonyms, by Rai Bahadur Sarat Chandra Das, C.I.E. This work, as distinguished from the Dictionary of Csoma de Körös, which was based on the classical language of Tibet, and that of Jäschke, which has a similar basis and reproduces also largely the language of Western Tibet, claims the merit of dealing specially with the language of the central country and of the modern and current literature, and also of furnishing the Sanskrit equivalent of each Tibetan term—an important contribution towards the exact study of Tibetan literature, which is so largely founded on Sanskrit. In the Sanskrit rendering of the Tibetan valuable help has been given by Pandit Satis Chandra Acharjya Bidyabhusan, one of our promising junior members; and the Rev. Graham Sandberg and the Rev. A. Heyde have also very materially improved the whole work by a thorough revision. Anthropological research has been stimulated in the past by the successive Census operations, and will receive fresh stimulus from the recent Census. We have as Secretary in that section Mr. Gait, the officer to whom the Census was entrusted in Bengal, and the Society may look to much valuable work at his hands. We owe to his suggestion the apparently small, but important, innovation of publishing short notes in our Journals, which the Council have sanctioned. It is hoped that many persons who are in a position to contribute interesting anthropological, philological, and other items of information which, though too small to be published as separate papers,



are well deserving of permanent record, will avail themselves of the facility afforded to them. Such notes, instructive in themselves, will often suggest enquiry, which will add to the store of information on the subjects dealt with. These minor points for discussion will often suggest themselves to students in language and literature, in anthropology and in archæology.

In other branches of science more and more is being done in India under the auspices of the Government or by private individuals, and the Society affords, through the medium of its Journal, a ready means of communicating to the world observations and results which interest the student and the man of business.

Speaking now generally, I would say that a Society which embraces so wide a range of subjects as ours cannot fail to find at all times interesting matter for discussion. New theories in science are constantly presented to the world: some survive to an enduring acceptance; some pass away after a stormy life of controversy; and some perish almost at their birth; but all afford matter for thought, speculation, and discussion. The vicissitudes of scientific ingenuity are humourously alluded to in the following lines of Moore, which I am tempted to quote to you:—

“In science, too—how many a system, raised  
Like Neva’s icy domes, awhile hath blazed  
With lights of fancy and with forms of pride,  
Then, melting, mingled with the oblivious tide!  
Now earth usurps the centre of the sky,  
Now Newton puts the paltry planet by;  
Now whims revive beneath Descartes’ pen,  
Which now, assailed by Locke’s, expire again.  
And when, perhaps, in pride of chemic powers,  
We think the keys of Nature’s Kingdom ours,  
Some Davy’s magic touch the dream unsettles  
And turns at once our alkalis to metals.”

I trust, gentlemen, that the remarks which I have offered on our past and future work have sufficed to make it clear that this Society has still before it a life of robust vitality. I would express the hope that our numbers may increase, and that we may count on additions to our list of active members. The Annual Report indicates a steady growth in our Members’ list during the past five years, but the roll falls short of the figures attained in some former years, and we may reasonably look forward to an accession of members. Many may be deterred

by a modest diffidence from entering the portals of a learned Society, but we demand no thesis for admission into our ranks, and we do not expect, although we are always gratified, to receive contributions from our members. In the words of Sir William Jones, we do not require "any other qualification than a love of knowledge and a zeal for the promotion of it;" and that zeal may manifest itself by general support to the Society as well as by active labour on its behalf.

I now pass to a brief notice of our publications and of the papers read at our meetings during the past year. The former include three works in the *Bibliotheca Indica* Series, of which the first is a Commentary on the best handbook of the later Mahāyāna School of Buddhism. A copy of this work, which was greatly needed for the proper translation of the handbook, was discovered by Mahāmahopādhyāya Haraprasād Shāstri in the Durbar Library of Nepal, and an edition of it and of the handbook is being brought out, Professor Poussin of Ghent having undertaken the task for the Society. Another philosophic Buddhist work in Sanskrit under publication is in the editorial charge of Babu Pratāpa Chandra Ghōṣa. The first portion of a translation, by Maulvi Abdus Salam, Deputy Collector, of the *Riyazu-s-Salatin*, a well-known Muhammadan history of Bengal written in the eighteenth century at Malda, has also been published. Of the Journal of our Philological Section three Parts appeared during the year, of which two were Extra numbers containing Dr. Hoernle's erudite report on a collection of antiquities from Central Asia, and a valuable contribution from Colonel J. Davidson, in the form of notes and short sentences, on the grammar and language of the Bashgali dialects of Kafiristan. The publication of Sir George King's *Materials for a Flora of the Malayan Peninsula* was continued in the Natural History Part of the Journal, the Government of the Straits Settlements contributing largely to the cost, in appreciation of this important work. Of the Anthropological Part of the Journal three numbers were published, containing, among others, papers of great interest by Mr. Holland on the Coorgs and Yeruvas of Southern India, by Mr. Friend-Pereira on the Marriage Customs of the Khonds, by Mr. Bompas on the Folk-lore of the Kolhān and by Babu Monmohan Roy on the Rājvañçi Caste of North-Eastern Bengal. I would congratulate Mr. Holland on his versatile excursion into research outside of his special domain of Geology, in which he has done so much good work for the Government, and express the hope that both he and the other gentlemen whose papers I have mentioned will place us under further obligation for many interesting contributions to our Journal. Dr. Ross, our Philological Secretary, has drawn attention to the delay which occurs through the printing in India of contributions to our Journal by home residents,

and the matter will be considered by the Council. I trust that our Journal will be fuller during the present year.

Of the papers read at our meetings many have appeared in our Proceedings and Journal, and the rest should be published shortly. The list is a long one, comprising 45 papers, and we are much indebted to the contributors. Mr. Finn, our late Natural History Secretary, favoured us with several of his always interesting papers on Birds, and Mahāmahopādhyāya Haraprasād Shāstri, our Joint Philological Secretary, gave us much information on subjects which lie within his special branch of research; while among the papers which I have not noticed in referring to the issues of our Journal, I would specially mention the thoughtful and suggestive paper On Tidal Periodicity in the Earthquakes of Assam, by Mr. Oldham, the excellent Anthropological Notes on Calcutta Juvenile Criminals by Major Buchanan, the Inspector-General of Jails in Bengal, and Dr. Mann's Notes on the Tea Bug, or Mosquito Blight, of Assam, and on the enzymes of the Tea Leaf, both of which record the results of enquiries of great importance to the Tea Industry. Major Buchanan's Notes indicate the marked similarity in physical and anatomical peculiarities which exists between the boy criminal of this city and his social type in the European cities. He has disarmed protest on behalf of those well-behaved and worthy members of society to whom nature has inconsiderately given one or more of these peculiarities, by disclaiming any intention of proving more than that the peculiarities are found in far greater number in the individual criminal, and among criminals as a class, than among normal individuals.

It is my duty to refer to the death during the past year of our Treasurer, Captain McArdle, and our late President, Sir John Woodburn. The Council recorded resolutions of sympathy and condolence on these sad events, and a similar resolution on the death of our late President was passed at the last monthly meeting, which has been respectfully conveyed to Lady Woodburn. Captain McArdle had at an early age attained distinction as a naturalist, and his premature death has been a loss to science, and to this Society, in whose proceedings he would have taken a prominent part. The late Lieutenant-Governor was for many years a member of the Society, and he gave practical evidence of his interest in its work by holding in 1900 and 1901 the position of its President, and taking a share in the duties of the Council, amidst the ceaseless labours of his great official charge. In the universal regret at his death none felt more than the members of this Society, who always received from him the genial and patient courtesy which won the admiration of all. You will remember, gentlemen, his promise on the last occasion on which he addressed us, that he would

read at some future meeting a paper on the work of conservation of monuments done at Gaur and Pandua in the district of Malda during his administration. It is due to his memory in this Society that I should, on this occasion, however briefly, place before you some account of that work.

The ruins of Gaur have for more than a hundred years attracted the notice of Englishmen, and we have early descriptions of them, besides that, accompanied by photographic illustrations, which is so well known to us as the work of Mr. Ravenshaw, edited and published by his widow in 1878. No systematic restoration and preservation of the most striking and beautiful among them appears, however, to have been undertaken until the present day. On the contrary, the work of destruction, begun in early years, was apparently allowed to continue in our time. Mr. Ravenshaw remarks that there is not a village, scarce a house, in the district or the surrounding country which does not bear evidence of having been constructed from these ruins, materials from them having been carried even as far as the cities of Murshidabad, Rajmahal, and Rangpur; and a footnote of his book brings to notice the strange, but melancholy, fact that in the early days of our revenue administration the right to dismantle Gaur of the beautiful enamelled bricks which adorned its buildings was farmed out to the landholders of the district! The capital of the Hindu Kings of Bengal, Gaur, passed, by conquest, into the hands of the Muhammadan rulers of the Province in 1198, and it was during their occupation that it attained its enormous dimensions and its magnificence, until its sack by Sher Shah in 1537, followed by its depopulation by a virulent epidemic of plague in 1575, led to its abandonment. During the centuries which have since passed the climate and the spoliation to which I have referred have necessarily left of the city but a number of scattered ruins, many in hopeless dilapidation, but some fortunately retaining enough of their structure and beauty to merit and reward careful preservation. Among these are the large Golden Mosque, the Dakhil Gate, the Qadam Rasul Mosque, the Minār, the Tantipārā Mosque and the Lattan Mosque, on all of which work has been done by the Bengal Government. The Golden Mosque, or Bāradarwāji, commenced by Husain Shāh and completed by his son Nasrat Shāh between 1521 and 1532 A.D., was perhaps the finest of the Gaur mosques. The principal portion now left is a corridor, having arched openings at each end and eleven graceful arches on each side, surmounted by domes, the whole being faced with large blocks of black hornblende, and the total length being 180 feet by 80 feet. The arches and the crowns of the domes have been repaired, the fallen domes have been restored and facing stones have been put in part of the walls. The stones in a tower at the northern

gate have also been re-set. It is proposed to replace at the springing level of the arches a band of a peculiar blue-coloured stone, which is still procurable. The Dakhil Gate, or northern entrance to the Fort, with a frontage of 70 feet, has an arch of great height, leading into a corridor of 112 feet in length and containing four doors on either side opening into rooms which were probably used by the guard. It was a substantial structure of small red bricks, ornamented with embossed bricks, and having towers at the four corners, and is believed to have been built by Bārbak Shāh between 1460 and 1474. The work of restoration on this gateway consists, for the present, of the rebuilding of the front or northern arch over the entrance, all damaged and missing ornamental bricks being replaced, and of the repairing of the lower portions of the wall of the main rooms. The Qadam Rasul Mosque, which is covered by a single dome, with minarets at the four corners, contains, as its name implies, a stone believed by the faithful to bear an impress of the Prophet's foot, which is said to have been brought from Medina by Husain Shāh, whose son, Nasrat Shāh, built the mosque in 1530. It is much resorted to by pilgrims, and is in fair preservation. Little was required to be done on it, and the work has been completed. The Minar, which is outside the eastern gate of the Fort, is about 80 feet high, a spiral staircase leading to the top, where stood a small apartment covered by a dome, which has fallen in. It is believed to have been built about 1488. The brickwork up to the top and the spiral staircase have been repaired. Of the Tantipārā Mosque, which was probably erected between 1474 and 1481, unfortunately not much remains. It is elegantly and profusely ornamented with embossed bricks, and the interior is supported by massive stone pillars, the western side being occupied by elegantly carved prayer niches. Fallen pillars have been re-erected and the brickwork in front of the pilasters and arches done up; and several tombs lying within the precincts will be repaired and re-covered by the stones which formerly lay on them. Not far from this mosque is the Lattan or Painted Mosque, supposed to have been built by the same monarch. It was greatly admired by Francklin, who visited Gaur in 1810, and its great proportions, its pillars, its domes, its minarets and its beautiful tilework of variegated colours, are very appreciatively described by him; but it is now in a very dilapidated condition. The walls of the southern bays of the main room have been repaired with all the old coloured tiles which could be found, the result being very satisfactory. It is proposed to restore experimentally one arch and one bay with new coloured tiles, as subdued as possible; but, if the result is unsatisfactory, the arches under the still standing domes will be repaired with ordinary brick-

work. On the outside only work which is absolutely necessary to prevent a wall from falling, and the repairing of cracks in the domes, will be undertaken. Of the other remains of Gaur some may possibly receive repairs hereafter. Perhaps the most notable, however, the Bais Gaji wall, seems to be beyond any material help. Its crest is so thickly covered by trees and jungles, whose roots descend far into the brick-work, that the removal of these might lead to an early collapse of great portions of the ruin. This remarkable wall, which surrounded the palace enclosure, is of great thickness, and 22 yards (Bāis Gaj), or 66 feet, in height.

Pandua lies, in an opposite direction, at much the same distance from Malda as Gaur. It was a smaller city, but the kings resided there at some periods, and the present remains include the Adina Mosque, to which Gaur had no equal, and which must have been among the largest mosques in India. This mosque, which was erected by Sikandar Shāh about 1369 A.D., is a quadrangular building, with an inner court, 500 feet in length from north to south and 300 feet in width. Four rows of pillars in blackstone on the western, and two on the northern, eastern and southern, sides supported domes, resting on every set of four pillars, and open arches led into the inner court. The walls were faced outside with black hornblende, and ornamented within by trellis work on three sides, while one side contains prayer niches of hornblende elaborately sculptured. The mosque was entered on the west side by a small door, through a transept eighty feet high, on one side of which stands the Badshah ka Takht, or King's Throne, a stone platform supported by three rows of massive hornblende pillars, twenty-one in number, and on the other the pulpit, of beautiful carved stone, ascended by several steps. Of the domes only a number of those which covered the north-western portion of the mosque remain. The Badshah ka Takht survives in fair preservation, as also the greater part of the western walls. Most of the pillars have fallen, but their bases are in position. The full extent to which the repairs of the mosque will be carried has not been finally settled, but much will be undertaken, especially for the restoration of the Badshah ka Takht and the Pulpit, and the repair of the domes. The north wall, the south transept wall, several arches and some domes have been repaired. Pandua also had its Golden Mosque, built in 1585, a beautiful work in hornblende, the walls of which survive, the interior containing a fine pulpit. Repairs have been done to the walls and arches, the pulpit and the minars. Another mosque, the Eklakhi, lies at a short distance. It is a building of embossed bricks and hornblende, eighty feet square, covered by a single dome, and contains the tombs of Giyasuddin Shāh, his wife, and his daughter-in-law. It was pro-

bably constructed by that sovereign, whose reign terminated in 1397. Repairs have been done to the walls, the floor and the tombs, those which it may be advisable to effect in the dome remaining. The tombs of the saints Mir Kutb Alam and Makdum Shāh are also interesting objects at Pandua.

In addition to the repairs, I should mention that in all cases, at both Gaur and Pandua, *débris* and jungle have been cleared from the interiors of the monuments and the ground outside, and that it is proposed to surround each ruin with a green sward. A constant struggle must, indeed, be maintained against the growth of jungle on the ruins themselves and in their immediate neighbourhood. A considerable sum has been, and will still be, spent on the work of saving these ruins from further dilapidation which has been so earnestly taken up by the Government of Bengal. When all that is requisite and possible has been done, a new illustrated and descriptive account of them would, I doubt not, be very acceptable to the public.

Sir John Woodburn visited Gaur thrice and Pandua twice. Both places were also visited by His Excellency the Viceroy in February last. Those of us who were present will recall the pleasure with which we listened to the paper on Ancient Monuments in India which His Excellency, as Patron of this Society, did us the honour of reading at the Annual Meeting three years ago. His Excellency's profound and practical interest in the historical monuments and antiquities of India has since been demonstrated by inspections of them throughout the country; and at Gaur and Pandua his instructions and suggestions have guided, and will guide, much of the work of restoration and conservation, the essential principle in the restorations being, as I understand, that only such should be undertaken as are necessary to prevent further dilapidation.

While Gaur and Pandua demanded his first care, Sir John Woodburn also saw the need of action at Bhubaneshwar in the Puri District, and, under his orders, repairs have been undertaken on several of the numerous temples which have made the fame of that place with the antiquarian. The great Lingarāj Temple, especially, has received much attention, and repairs have been carried out on the principal of the sacred tanks. Some petty restorations have also been effected in the exceedingly interesting Khandagiri and Udaigiri caves of the same neighbourhood, some of which date back to the second century B.C. His Excellency the Viceroy also saw Bhubaneshwar.

I have myself, gentlemen, had the opportunity of visiting Gaur, Pandua and Bhubaneshwar, and to those who take an interest in antiquities I commend visits to them when the chance offers. Gaur and

Pandua are unfortunately at present not easy of access, but they will, it may be hoped, be reached, without great inconvenience, from Calcutta hereafter by the extension of the railway through Murshidabad to the Ganges, to connect with the Bengal and North-Western system. To Bhubaneswar the journey by rail is convenient and pleasant.

The President announced that the Scrutineers reported the result of the election of officers and members of Council to be as follows:—

*President.*

The Hon'ble Mr. C. W. Bolton, C.S.I., I.C.S.

*Vice-Presidents.*

H. H. Risley, Esq., B.A., C.I.E., I.C.S.

Col. T. H. Hendley, C.I.E., I.M.S.

R. D. Oldham, Esq., A.R.S.M., F.G.S.

*Secretary and Treasurer.*

Honorary General Secretary:—J. Macfarlane, Esq.

Treasurer:—C. R. Wilson, Esq., M.A., D. Litt.

*Additional Secretaries.*

Philological Secretary:—T. Bloch, Esq., Ph.D.

Nat. Hist. Secretary:—Captain L. Rogers, M.D., B.Sc., I.M.S.

Anthropological Secretary:—W. A. Gnit, Esq., I.C.S.

Joint Philological Secy.:—Mahamahopadhyaya Haraprasad Shastri.

*Other Members of Council.*

A. Pedler, Esq., F.R.S., C.I.E.

J. Bathgate, Esq.

T. H. D. La Touche, Esq., B.A.

Kumar Ramessur Maliah.

Arnold Caddy, Esq., M.D., F.R.C.S.

E. D. Ross, Esq., Ph.D.

The Hon. Dr. Asutosh Mukhopadhyaya, M.A., D.L., F.R.S.E.

I. H. Burkill, Esq.

H. E. Kempthorne, Esq.

The Meeting was then resolved into the Ordinary General Meeting.

THE HON. MR. C. W. BOLTON, C.S.I., I.C.S., President, in the chair.

The minutes of the December Meeting were read and confirmed.

The Council reported that owing to the Delhi Darbar no meeting was held in January.

Twenty-six presentations were announced.



Rai Bahadur Bhawan Das and Mr. Abdul Alim were ballotted for and elected Ordinary Members.

It was announced that Major H. E. Drake-Brockman, Lieut. B. Scott and Rai Chuni Lal Bose Bahadur, had expressed a wish to withdraw from the Society.

The General Secretary reported the death of General J. E. Gastrell, a Life Member of the Society.

The President announced that Lieutenant-Colonel G. Ranking, I.M.S., re-elected a Member of the Society on 5th February, 1902, having not paid his entrance fee, his election has become null and void under Rule 9.

The General Secretary reported the presentation of three silver coins from the Government of United Provinces of Agra and Oudh.

The Anthropological Secretary exhibited the accompanying photograph of a cave found by Lieutenant Macleod near the small village of



Pandran in the Jhālāwan Country, south-east of Kalat in Baluchistan, which had apparently been used as a burying place—the following account

of the place by Lieutenant Macleod was received with the photograph, from Mr. R. Hughes-Buller, Superintendent, Imperial Gazetteer, Baluchistan.

Pandran is a pretty place on a basin of the hills with plenty of water from two springs on the west. The village, which contains five or six Banniah shops and about fifty houses, is situated round an elevated rock known as Anbir. There is much cultivation and plenty of trees.

Due west of the village at a distance of about a quarter of a mile is an extraordinary cave situated in the skirt of the hill. All the ground round is rolling and in the side of one of the folds is a hole just big enough for a large man to squeeze through. It is said that this hole was uncovered and exposed to view by a flood or erosion of the ground some 50 or 60 years ago. On entering the hole, which is almost in the centre, one finds oneself in an underground vault consisting of a front chamber and two recesses. The breadth of the chamber is about 18 feet and the length to the back of each recess about 16 feet. The recesses are round with domed roofs; the front chamber also has a domed roof. Thus:—

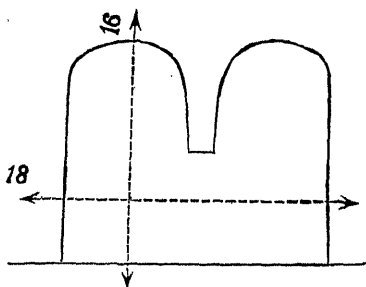


Fig. 1.

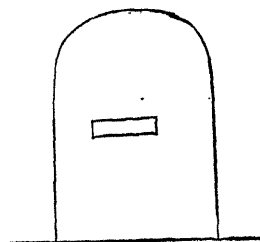


Fig. 2.

Section of right-hand recess.

The whole appears to have been hewn out of the conglomerate rock. At the left-hand corner of the centre partition is a heap of bones and with this exception there is nothing in the left-hand recess.

In the right-hand recess a niche has been cut out of the rock about 6' x 3' x 3'. In it there are twenty-five skulls, one of them is a small one and appears to be that of a child. The rest appear to be those of adults. There are also the ribs and leg-bones of a child down to the knees. In the centre of the right-hand recess lies a bed which, according to the country people, when the vault was just opened, supported a skeleton. The strings of the bed have now, however, given way and the skeleton, which is evidently that of a man, is lying on its back, on

the ground below the bed. There are holes, which appear to be those of a bullet or arrow on the right temple and at the left side of the back of the skull.

Lying near the bed is the skeleton of a large dog which the people say was tied to the bed or *charpoy* by a string when first observed. Between the bed and the back of the recess are a few bones. The bed is firmly made of rounded wood (including the frame) and is still in good condition. Lieutenant Macleod seated himself on it when exploring the cave. Over the ribs and head of the corpse was a coarse cloth, thin, and of a dirty yellow colour.

The natives point to another place about 20 yards away and say that there is another vault there in which women's skeletons are to be found. No one living appears to have ever entered the second cave, if it exists as alleged.

The natives hold the place in considerable awe and have a theory that the place was the scene of a fight. The whole vault was extraordinarily symmetrical.

The following papers were read:—

1. *Note on the occurrence of Motacilla Taivana (Swinhoe) near Calcutta.*—By CAPTAIN H. J. WALTON, I.M.S.

2. *Gayā Āraddha and Gayāwāls.*—By L. S. S. O'MALLEY, I.C.S. Communicated by the Anthropological Secretary.

(Abstract).

The Gayā District, says Mr. O'Malley, is remarkable for the diversity of religious beliefs found there. It is the cradle of Buddhism and still attracts devout pilgrims from distant countries. The real working religion of the great majority of the inhabitants is the propitiation of devils, while Gayā itself is the place to which all pious Hindus resort whose ancestors require deliverance from the condition of evil spirits by means of the Gayā Āraddha. The popularity of this Āraddha seems to date from comparatively recent times. The Gayāwāl Brāhmaṇas who conduct the ceremony profess to be of the Vaiṣṇava sect, but the most prominent place in the invocations offered, is taken by Yama, the God of death, whose presentation in the local legends is very far removed from the conception given in the Vedas, and is more that of the popular devil. The ceremony performed, moreover, affords clear traces of the propitiation and worship of ancestors, and of the primitive conception of roaming spirits. These circumstances and the fact that the Dhāmis, whose Brāhmaṇical origin is doubtful, take the offerings at certain points, all go to show that the popular demonolatry of the district has

had a large share in the origin of what is now regarded as a perfectly orthodox and highly meritorious rite. The origin of the Gayāwāls is uncertain. They are ignorant and dissolute, but during the ceremony over which they preside, they are worshipped even as Viṣṇu himself. They are gradually dying out, and in the meantime, they have peculiar practices of adoption for which there is no authority in the *Çāstras*. These are described at some length in Mr. O'Malley's paper.

3. *Some Notes on the Religion and Superstitions of the Orāṣns.*—By REV. F. HAHN. *Communicated by the Anthropological Secretary.*

(Abstract).

The author enumerates the various objects of worship which he classifies under three heads—benevolent spirits, malevolent spirits and noxious spirits and apparitions. He then proceeds to describe the various priestly offices and the lands assigned for religious purposes. Certain prevalent superstitions are discussed and a list is given of a number of totemistic septs with the *taboo* attached to each. Most of these totems are already enumerated in Mr. Risley's book on the tribes and castes of Bengal.

4. *Notes on the Koch, Poliyā and Rājvaṃçi in Dinājpur.*—By HARI-MOHAN SINHA. *Communicated by the Anthropological Secretary.*

(Abstract).

This paper, like that by Babu Monmohan Roy, which was read at the November meeting, deals with the group of tribes in North Bengal, who are often classed together as Rājvaṃçi-Koch, but it approaches the subject from a different standpoint and deals with the social distinctions which now exist rather than with the ethnic affinities of the different groups. It appears, however, incidentally that the term Rājvaṃçi has a different application in Dinājpur from that which it appears to have in the Rangpur District. It is shown that the term Deçi refers not to a distinct caste, but to a subdivision both of the Koch and of the Poliyā castes.

A full analysis of these interesting tribes still remains to be written.

5. *The green bug and other jassids as food for birds.*—By H. W. PEAL, F.E.S.

6. *Contributions towards a Monograph of the Oriental Aleurodidæ.*—By H. W. PEAL, F.E.S.

7. *The function of the vasiform orifice of the Aleurodidæ.*—By H. W. PEAL, F.E.S.

## LIBRARY.

The following additions have been made to the Library during 1902.

## TRANSACTIONS, PROCEEDINGS, AND JOURNALS.

## ASIA.

## Ceylon.

- COLOMBO. *Royal Asiatic Society, Ceylon Branch, Journal*, Vols. II, Nos. 5., X, 35-36., XI, 38-41., XII, 42-43., XIII, 44-45., XIV, 46-47., XV, 48-49., XVI, 50-51., XVII, 52; *Proceedings*, 1887-1890.
- PERADENIYA. *Royal Botanic Gardens, Annals*, Vol. I, Parts 1-2.

## India.

- ALLAHABAD. *Department of Land Records and Agriculture, N.W.P. and Oudh, Agricultural Series, Bulletin*, Nos. 8-18.
- . *Indian Forester*, Vol. XXVIII, Nos. 1-12.
- BOMBAY. *Anthropological Society, Journal*, Vols. V, Nos. 8., VI, 1-2.
- . *Epigraphia Indica*, Vols. VI, Parts 7., VII, 1-3.
- . *Indian Antiquary*, Vols. XXX, Parts 380-385., XXXI, 386-396.
- . *Natural History Society, Journal*, Vol. XIV, Nos. 1-2.
- . *Royal Asiatic Society, Bombay Branch, Journal*, Vol. XXI, No. 57.
- CALCUTTA. *Agricultural and Horticultural Society of India, Proceedings and Journal*, October-December, 1901.
- . *Agricultural Ledger*, Nos. 14, 1901., 1-7, 1902.
- . *Botanical Survey of India, Records*, Vol. II, Nos. 1-3.
- . *Buddhist Text and Anthropological Society, Journal*, Vol. VII, Part 2.
- . *Calcutta Review*, Vols. CXIV, Nos. 227-228., CXV, 229.
- . *Geological Survey of India, Memoirs*, Vols. XXXII, Parts 3., XXXIV, 1-2; *Report*, 1901-1902; *Memoirs, Palæontologia Indica*, New Series, Vol. II, No. 1.
- . *Indian and Eastern Engineer*, New Series, Vols. X, Nos. 1-4, 6., XI, 1-5.
- . *Indian Engineering*, Vols. XXXI, Nos. 1-26., XXXII, 1-26.
- . *Indian Lancet*, Vols. XVIII, Nos. 12, 14., XIX, 1, 3-8, 10-12, 14-16, 18-26., XX, 1-26.
- . *Indian Meteorological Memoirs*, Vol. XII, Nos. 2-4.
- . *Mahabodhi Society of India, Journal*, Vols. X, Nos. 10, 12., XI, 1-3, 5-6.
- . *Monthly Weather Review*, January-December, 1901., January-June, 1902.

CALCUTTA. *Photographic Society of India*, Journal, Vol. XVI, Nos. 1-12.

MADRAS. *Astrological Magazine*, Vols. V, Nos. 12., VI, 3-4, 7-10.

———. *British Medical Association, South Indian Branch*, Transactions, Vol. IX, No. 3.

———. *Government Museum*, Bulletin, Vol. IV, No. 2.

MYSORE. *Geological Department*, Records, Vol. II.

SIMLA. *United Service Institution of India*, Journal, Vol. XXXI, Nos. 146-149.

### Indo-China.

HANOI. *Ecole Française d'extrême-Orient*, Bulletin, Tome I, Nos. 4., II, 1-3.

### Japan.

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———. *Deutsche Gesellschaft für Natur- und Völkerkunde Ostasiens*, Mittheilungen, Band VIII, Nrn. 3., IX, 1., Supplement Nr. 5.

———. *Imperial University*, Calendar, 1901-1902; Journal of the College of Science, Vols. XVI, Parts 1-2, 6-14., XVII, 1-3, 7-10.

———. *Kaiserlich-Japanische Universität*, Mittheilungen aus der Medicinischen facultät, Band V, Nrn. 2 und 4.

### Korea.

SEOUL. *Royal Asiatic Society, Korea Branch*, Transactions, Vol. II, Part I.

### Malay Archipelago.

BATAVIA. *Bataviaasch Genootschap van Kunsten en Wetenschappen*. Natuurkundig Tijdschrift, Deel LXI; Notulen, Deel XXXIX, Aflevering 3., XL, 1; Tijdschrift voor Indische Taal-, Land- en Volkenkunde, Deel XLV, Aflevering 1, 2, 4; Verhandlungen, Deel LIV, Stuk 1., LV, 1.

### Malay States.

TAIPING. *Perak Government*, Gazette, Vol. XV, Nos. 1-44.

### Straits Settlements.

SINGAPORE. *Royal Asiatic Society, Straits Branch*, Journal, Nos. 37-38,

## EUROPE.

### Austro-Hungry.

BUDAPEST. *Aquila*, Band VIII, Nrn. 1-4.

———. *Magyar Tudományos Akadémia*, Ertekenzések, Kötet XVII, Szam 6-8; Nyelvtudományé Közlemények, Kötet XXX, Füzet 3-4., XXXI, 1-2.

BUDAPEST. *Société Hongroise de Géographie*, Bulletin, Tome XXVIII, Nos. 1-10.

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PROCEEDINGS  
OF THE  
ASIATIC SOCIETY OF BENGAL.  
FOR MARCH, 1903.

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The Monthly General Meeting of the Society was held on Wednesday, the 4th March, 1903, at 9 P.M.

COLONEL T. H. HENDLEY, C.I.E., Vice-President, in the chair.

The following members were present :—

Major W. J. Buchanan, I.M.S., Mr. I. H. Burkill, Babu Girindra Nath Dutt, Mr. E. V. Gabriel, Mr. H. E. Kempthorne, Mr. C. Little, Mr. W. S. Meyer, Mr. J. Nicoll, Mr. A. Pedler, Pandit Yogesā Chandra Sastree, Mahamahopadhyaya Haraprasad Shastri, Dr. C. Schulten, Babu Chandra Narayan Singh, Mr. E. P. Stebbing, Pandit Satis Chandra Vidyabhusana, Mr. C. R. Wilson.

The minutes of the last meeting were read and confirmed.

Ten presentations were announced. .

Mr. Charles Gilbert Rogers, F.L.S., and Captain Andrew Thomas Gage, I.M.S., were ballotted for and elected Ordinary Members.

It was announced that Mr. J. C. Mitra had expressed a wish to withdraw from the Society.

The General Secretary reported the death of Professor Edward Bayles Cowell and Sir George Gabriel Stokes, Honorary Members of the Society.

At the request of the Council Mahamahopadhyaya Haraprasad Shastri contributed an obituary notice of Professor Cowell, and the Hon. Dr. Asntosh Mukhopadhyaya of Sir George Stokes.



E. B. Cowell, Esq., M.A., came to India as Professor of the Presidency College, Calcutta, and remained in Calcutta till the year 1864. He was Professor of History in that College, and Principal of the Sanskrit College. His notes brought the History of India by Elphinstone up to date, and the Sanskrit College flourished greatly under his fostering care. He studied *Alamkāra* and *Nyāya* in the Classes, and there are still many old students of the College who remember him sitting on the benches listening attentively to the Professors and taking notes. But he derived his knowledge of Hindu Philosophy mainly from our illustrious countryman Mahamahopadhyaya Maheshchandra Nyaya-ratna, C.I.E. Though as Principal he had no teaching-work assigned to him, he often taught English to students, and gave prizes and presents to smart Sanskrit pupils. He left some money for the foundation of a Grammar Scholarship in the Sanskrit College.

He was for years Secretary of the Asiatic Society of Bengal, and edited several Sanskrit works for the *Bibliotheca Indica* Series. I still hold a letter written by him to my brother Nandakumar Tarkaratna who was joint editor of *Vaiṣṇika Dargana* in this Series. Till the last year of his life he corresponded with his numerous Indian friends on literary topics and his letters breathe a spirit of freshness and vivacity rare in that old age.

HARAPRASAD SHASTRI.

The following is an extract from an obituary notice written by Prof. C. Bendall for the *Athenæum* and reprinted in the *Journal of the Royal Asiatic Society*, April, 1903, on pages 419 ff:—

Cowell was born at Ipswich, January 23rd, 1826, and was educated at Ipswich School. During his schooldays he used to read in the Public Library, and there in 1841 came on Sir William Jones' works, reading especially the translation of the Sanskrit play "*Sakuntala*." "I well remember," he said, in a memorable address given to the Royal Asiatic Society in 1898, "the joy of finding a Persian Grammar among his works, and I soon learned the characters.....and began to study the anthology." From this book, he added, he gave, "thirteen years afterwards,.....FitzGerald his first lesson in the Persian alphabet." In the same year he saw Professor H. H. Wilson's "*Sanskrit Grammar*" advertised, which he bought not long after. "Of course, I found Sanskrit too hard," he continued, "but I returned to Persian meanwhile, reading alone the "*Shāhnāmāh*" and *Hāfiz*." His first guide in Oriental studies was Colonel Hockley, an old Bombay officer settled in Ipswich, with whom he read *Jāmi*. On leaving school he at first entered into commerce under his father, and it was in course of business visits to London that he formed the acquaintance of H. H.

Wilson, then Librarian of the India House. He gradually acquired considerable proficiency in Sanskrit; for in 1851 he published a translation of Kālidāsa's play "Vikramorvaśi." His actual systematic study under Wilson commenced, however, only in 1853, as we learn from his address to the Cambridge Electoral Roll. In 1847 he married Miss Elizabeth Charlesworth, and in 1850 entered the University of Oxford, being then obliged, as a married man, to enter a hall (Magdalen Hall), not a College. He took honours both in Classics (First Class, Final 1854) and in Mathematics, and the University somewhat tardily acknowledged his eminence by the honorary degree of D.C.L. in 1896. In 1856 he was appointed Professor of History at Presidency College, Calcutta, and in 1858 also Principal of the Sanskrit College in the same City. Here he remained till 1864, and laid the real foundation of his reputation as an Orientalist, the happy combination of wide and deep Western Culture with the concentrated traditional lore of the Eastern pandit.

In 1867 Cowell was elected to the Chair of Sanskrit, then just established at Cambridge, where the rest of his life was spent, both as a University Professor and a Fellow of Corpus Christi College (1874). Here he taught not only Sanskrit of varied periods and styles (*e.g.*, Indian Philosophy, thirty years ago hardly known in the Continental Universities), but also Comparative Philology and Persian. These subjects have now been provided by the University with separate teachers, and the same has been done for elementary Sanskrit, and justly, so as to economize the lavish expenditure of precious time that Cowell would bestow as freely on the beginner as on the advanced student. His Pali classes, started some five and twenty years ago, have resulted in the Cambridge translation of the Jātaka-book, under his guidance. More recently he read Zend with several pupils.

His own mental history may be illustrated by some of his chief works. To the Calcutta period belong his two editions and translations of Upaniṣads, and the text and translation of the difficult work of Indian logic, the "Kusumāñjali." Many native scholars were at the same time encouraged to edit texts which appeared with English introductions by the Professor. Similarly, on his return to England, his first Cambridge pupil, Palmer Boyd, was induced to translate the newly discovered Buddhist drama, 'Nāgānanda, which appeared with an introduction by Cowell. To the same time belongs his new edition of the Prakrit Grammar of Vararuci, of which he had issued a first edition in Oxford days. Two important works published in Cambridge days represent the continuance of researches in Indian philosophy begun in India. These are the "Aphorisms of Sāṅdilya" (1878), and the Sarva-darśana-samgraha," translated (portions also by Mr. A. E. Gough) in 1882.

Among the more recent of his important works were his text and translation of the "*Buddhacarita*" (1893-4), a publication which has created great interest amongst critical scholars abroad. Most characteristic, too, was his work for and with others. He more than once accepted the task, at times ungrateful, of finishing works of deceased scholars. Such were Wilson's version of the "*Rigveda*" (finally completed by his pupil, Mr. W. F. Webster), and the huge work of Mādhava left incomplete by Goldstücker. His chief works done with others were: "*The Black Yajurveda*" (edited partly with Dr. Rörö), 1858-64; *Catalogue of Buddhist Sanskrit MSS.* (with Dr. Eggeling), 1875; "*Divyāvadāna*," edited with the late R. A. Neil, 1886; "*Harṣacarita*," translated with Mr. F. W. Thomas, 1897. Lastly, let it never be forgotten that it was he, the scholar, known to the few, who introduced Omar Khayyam to FitzGerald, whose version is known wherever English literature is known.

#### SIR GEORGE GABRIEL STOKES.

Sir George Gabriel Stokes was born on the 13th August, 1819, at Skreen, Sligo, of which parish his father was Rector. At the age of sixteen, he was placed in Bristol College, of which Dr. Jerrard was Principal. He entered Pembroke College, Cambridge, in 1837, graduated in 1841 as Senior Wrangler and First Smith's Prizeman, became Fellow of his College in the same year, and in 1849, succeeded King as Lucasian Professor of Mathematics in the University of Cambridge. He continued to occupy Newton's chair till the day of his death which took place on the 1st February, 1903. Stokes was elected a Fellow of the Royal Society in 1851, acted as its Secretary from 1854 to 1885, as its President from 1885 to 1890, and as its Vice-President down to 1892. The Royal Society awarded him the Rumford Medal in 1852 and the Copley Medal in 1893. The Cambridge Philosophical Society awarded him its first Hopkins Prize, in 1867. He represented the University of Cambridge in Parliament from 1887-91.

It would be impossible within the limits of a brief obituary notice to give any adequate account of the scientific work of Sir George Stokes and its far-reaching consequences. There was no department of physical science, except electricity, which was not enriched by his brilliant original investigations. Students of hydro-dynamics can scarcely realize what advance was made by his great paper on the viscosity of fluids, published just sixty years ago. This was followed seven years later, by the paper on the effect of the internal friction of fluids on the motion of pendulums, which illustrates the wonderful mathematical resources of the author and his capacity for their application to the problems of physical science. Between these two papers came the epoch-making paper on the theory

of oscillatory waves, containing a masterly investigation of the motion of steep deep-sea waves. Of his contributions to the theory of light, the most important are the Memoir on the dynamical theory of diffraction published in 1849, and the Memoir on the refrangibility of light communicated to the Royal Society in 1852. The first of these papers contains the mathematical theory of the propagation of motion in a homogeneous elastic medium, followed by an elaborate experimental investigation establishing that the plane of polarization is the plane perpendicular to the direction of vibrations in plane-polarized light. The second paper contains a description of his now famous discovery of *fluorescence*. But although his contributions to hydro-dynamics, elasticity of solids and fluids, wave-motion in elastic solids and fluids, and the theory of optics are of enduring value, it would be a mistake to suppose that his contributions to pure mathematics were less original or less important. As an illustration we may refer to the theorem, now known as Stokes' theorem, which enables us to convert surface-integrals into line-integrals; it was first set as an examination question in a Smith's Prize-paper and is of as wide an application as the theorem of Green. Reference may also be made to his paper on definite integrals published in 1850; the theorems contained in this paper admit of extremely interesting applications to the theory of the rainbow.

The University of Cambridge undertook the publication of his collected mathematical and physical papers many years ago; the first volume was published in 1880, the second in 1883, and the third in 1901. These volumes bring us down to 1852. The Royal Society Catalogue shows that up to 1883, Stokes had published 106 original papers. It is to be hoped that a complete collection of the remaining papers will be speedily re-published.

Stokes was an Honorary Member of the most famous scientific societies of Europe and America which felt honoured by associating his name with themselves. He was elected an Honorary Member of this Society in 1894.

ASUTOSH MUKHOPADHYAYA.

The Chairman announced that Mr. E. P. Stebbing had been appointed to officiate as the Natural History Secretary of the Society during the absence of Captain L. Rogers, I.M.S.

The General Secretary read the names of the following gentlemen who had been appointed to serve on the various Committees for the present year:—

*Finance and Visiting Committee.*

Dr. T. Bloch, Mr. E. A. Gait, Mr. H. H. Risley, Mahamahopadhyaya

Haraprasad Shastri, Dr. E. D. Ross, Hon. Dr. Asutosh Mukhopadhyaya, Mr. J. Batlgate, Mr. H. E. Kempthorne.

*Library Committee.*

Dr. T. Bloch, Mr. D. Hooper, Mr. C. W. McMinn, Hon. Dr. Asutosh Mukhopadhyaya, Mahamahopadhyaya Haraprasad Shastri, Mr. E. Thornton, Mr. H. H. Mann.

*Philological Committee.*

Maulavi Ahmad, Dr. T. Bloch, Babu Pratapa Chandra Ghosh, Shams-ul-Ulama Mahomed Shaikh Gilani, Hon. Dr. Asutosh Mukhopadhyaya, Major D. C. Phillott, Pandit Satyavrata Samasrami, Mahamahopadhyaya Haraprasad Shastri, Mahamahopadhyaya Chandrakanta Tarkalankara, Dr. G. Thibaut, Babu Nagendra Nath Vasu, Mr. A. Venis, Dr. E. D. Ross, Mr. E. A. Gait, Pandit Satis Chandra Vidyābhūṣaṇa.

*Coins Committee.*

Lt.-Col. D. S. E. Bain, Dr. T. Bloch, Hon. Mr. J. A. Bourdillon, Babu Panchanan Mukerjee, Mr. E. Thurston, Mr. M. J. Seth, Mr. H. N. Wright.

Mr. Burkill exhibited on behalf of Mr. J. T. Tyson a dagger found in the soil of virgin forest near Chalsa, in the Bengal Duars. The origin of the dagger is quite unknown. It is now  $14\frac{3}{4}$  inches long and before rust ate the tip off was probably about an inch longer. The blade is  $6\frac{1}{2}$  inches long, has been two-edged and has had a median line down each face. It is  $1\frac{1}{4}$  inches broad at the broadest part. Where it begins to narrow to fit into the hilt two holes have been bored through the blade; these holes are  $\frac{1}{4}$  inch long,  $\frac{1}{8}$  inch broad, and  $\frac{3}{4}$  inch apart.

The hilt is very small being only  $3\frac{1}{2}$  inches long; it is in section elliptic, the long axis  $\frac{1}{2}$  inch at the middle of the grip and the short  $\frac{1}{2}$  inch. The ends of the hilt are wider than the middle. The blade and the hilt are in the same straight line. The finish of the hilt is good, but the blade fits very badly into it and a great deal of packing must have been put into the joint of the two. The hilt, Mr. D. Hooper finds, is made of an alloy of copper and tin: and the only ornamentation present consists of two simple lines round it.

The following papers were read:—

1. *The Śārāka caste of India identified with the Sērīkē people of Central Asia.*—By SATIS CHANDRA VIDYĀBHŪṢAṆA, M.A., M.R.A.S.

(Abstract.)

The people known as Śārāka or Śārāka live in West Bengal, Chota Nagpur, Orissa, and even in Assam. The celebrated ethnologist, Mr.

H. H. Risley, was perhaps the first scholar who gave a systematic account of the Śārāka caste which, according to him, is a Hinduised remnant of the early Jain people. Mr. Streatfield (Deputy Commissioner of Ranchi), observes that the Śārāks are purely Aryans in blood and seem originally to have been Jains though, however, they do now worship Hindu gods. Mr. E. A. Gait, who regards them as Buddhists, has given an elaborate account of them in the last Census Report of Bengal. Mahāmahopādhyāya Haraprasad Shāstri says that they are reciters of "Baudh mantras" or Buddhist formulas. In the *Brahma-vaivarta-purāṇa* they are regarded as a mixed Hindu caste born from a father who was a Mleccha weaver and a mother who was a Hindu weaver. Taking their own evidence we find that they call themselves Hindus, have priests of their own caste and also occasionally employ Brahmans. The Śārākas of Chota Nagpur as a rule are well-to-do land-holders and money-lenders, while those of West Bengal and Orissa are mostly excellent weavers. Dr. Dalton, in his *Descriptive Ethnology of Bengal*, mentions an Assamese hill tribe called Śārāka, that is a branch of the Hill Miris inhabiting the north of Bordoloni on both banks of the hill course of the Subanshiri river. They entered Assam by plundering some of the villages there, obtained under the Assam Raj a sort of prescriptive right to levy black-mail, and now receive annually from the British Government an equivalent in the form of a money-payment. Their religion consists in the belief in sylvan deities.

In the North-Western Provinces and Central India there are classes of people called Saraogies. They live in great number in Muzaffernagar, Mainpuri, Benares, Jaipur, Hoshangabad, &c. They are very rich and influential, and are Jains by religion.

The scholars, whose opinions have been quoted above, almost unanimously hold that Śārākas and Saraogies are identical in race, and that these two names are mere corruptions of *Śrāvaka* which is a Jain or Buddhist technicality for a religious devotee. While expressing my indebtedness to the abovementioned scholars for the interesting accounts they have given of the Śārāka and Saraogie castes, I beg altogether to differ from them in respect of the origins of the castes themselves.

In my humble opinion neither the term Śārāka nor Saraogie can be derived from *Śrāvaka*. The Pali form of *Śrāvaka* is *Sāvaka*, which can hardly assume the form Śārāka or Saraogie in which *ra* is so prominent. I believe the name *Śārāka* is derived from *Śerikē*, which was a vast province in Central Asia. The chapter which Ptolemy has devoted to *Śerikē* has given rise to various unprofitable controversies. The land of *Śerikē* is variously supposed to have lain in one or other of the many countries that intervene between Eastern Turkistan in the north and

the province of Pegu in the south. Scholars now generally maintain that Śērīkē comprised the northern parts of China or those which travellers and traders reached by land. The ancestors of Indian Śarākas did therefore probably originally come here from Northern China. The Śarākas of India like the people of Northern China are noted for their skill in weaving. In Sanskrit literature such as in the works of Kālidāsa and others, *Cīnāṃṇuka* or Chinese cloth, is a general name for all soft silken cloths. It is scarcely necessary for me to state here that the intercourse between the Indians and Chinese has existed since a very remote antiquity. According to the Mahābhārata (2-26-9) Bhagadatta, King of Assam, sent Kīrāta and Chinese soldiers to the great war of Kurukṣetra, near Delhi. Kālidāsa in his Raghuvamśa states that Rāghu, King of Ayodhyā, set out for conquest through the north-western frontier of India, conquered many people such as Utsava-Samketas, or U-tsang tribe in Central Tibet and came back to his capital through the north-eastern frontier crossing the Brahmaputra or Sangpo river in Assam. But perhaps the most intimate relation between India and China grew up with the establishment of Buddhism in the latter country. Between 2nd and 10th centuries A.D., hundreds of Indian missionaries went to China and Chinese pilgrims came to India. The Śarākas were in all probability traders who followed the land-route previously trodden over by religious pilgrims. The period of their migration to India was probably the 12th century A.D.

The Saraogies, I believe, are descended from the Sorgæ mentioned by Megasthenes (Fragm. LVI) and Pliny (Hist. Nat. VI) in their list of the Indian races. The two cities possessed by the Sorgæ are located by Megasthenes near the base of the Caucasus Mountain along the northern frontier of Afghanistan. The Sorgæ were perhaps the same as the people living in the city of Sariga which, according to Ptolemy, was situated in Area in the north-western part of Afghanistan. In the sacred books of the Jains themselves it is found that Acharyya Jina Sena, 643 years after the death of Mahāvira, i.e., 116 in A.D., converted to Jainism 82 Rajput villages and two villages of Vaiśyas at a place now called Khandela near Sikar in the north of Jaipur. The people who were thus converted were known under the name of Saraogies. Believing in this account supplied by the Jains themselves we may conclude that the people called Sorgæ that, in the time of Megasthenes in the 4th century B.C., lived in the north-western part of Afghanistan, advanced in the 2nd century A.D. so far down as up to the north of Jaipur in Rajputana and became designated as Saraogies.

I have not been able to trace any kinship of the Śarākas of West Bengal, Chota Nagpur, Orissa and Assam, with the Saraogies of North-

Western Provinces and Central India. In my opinion Śārākas and Saraogies are quite different people. The former who belong to the Mongolian race, entered India about the 12th century A.D. through the north-eastern frontier and introduced much improvement in the art of weaving, &c., and generally in trade and commerce. The latter, who are a branch of the Caucasian race, came into India about the 2nd century A.D. through the north-western frontier and formed themselves into a most influential community of traders and money-lenders. The Saraogies are Jains while the Śārākas are practically Hindus though originally they perhaps accepted other creeds too.

2. *On the origin of the Nikmard fair in Dinājpur.*—By MAULAVI ĀBDUL WALI.

(Abstract.)

This fair or *melā* commences on the 1st Baiçākḥ and lasts for a week. It is attended by about a hundred thousand people of all classes and religions. Some come for pleasure and others for trade. It is held in honour of a Muhammadan fakir from Bokhara whose *soubriquet* was Nikmard, "the holy man." According to the legend there was a Hindu rājā named Pitṛāj, who, being childless, begged the saint to pray for him and promised him a handsome reward, if he should be blessed with a son. A son was born, but the rājā forgot his promise, and Nikmard with his disciples engaged in hostilities. The rājā defeated and killed him. He was canonized as "Nikmard the Martyr." The care of his shrine and the profits from the fair are now in the hands of the fakirs of Baliyā-Dighi.

3. *On the history of the Hutwa Raj.*—By GIRINDRA NATH DUTT, B.A.

(Abstract.)

The Rajas of Hutwa are of the same caste as the Rajas of Benares, Bettiah, and Tikari. They are popularly called Babhuns or Bhumihaar Babhans to which caste the majority of the landed aristocracy of Behar belong. The Hutwa Raj family dates its origin from a prehistoric age. The present minor Maharaj-Kumar traces his descent from a long line of ancestors whom he counts up to 102 degrees above him. The founder of the dynasty was Raja Bir Sen. Allowing even an average of 25 years for each life, Raja Bir Sen would be about 25 centuries older than the present progeny of his and this would carry us back some six centuries before the Christian era, *i.e.*, nearly about the historical date of Buddha's birth. The patronymic of the earlier Rajas was "Sen" which in the 16th descent was changed to "Sinha" and in the 83rd to "Mull" and in the 87th to "Shahi" which last patronymic still continues in the



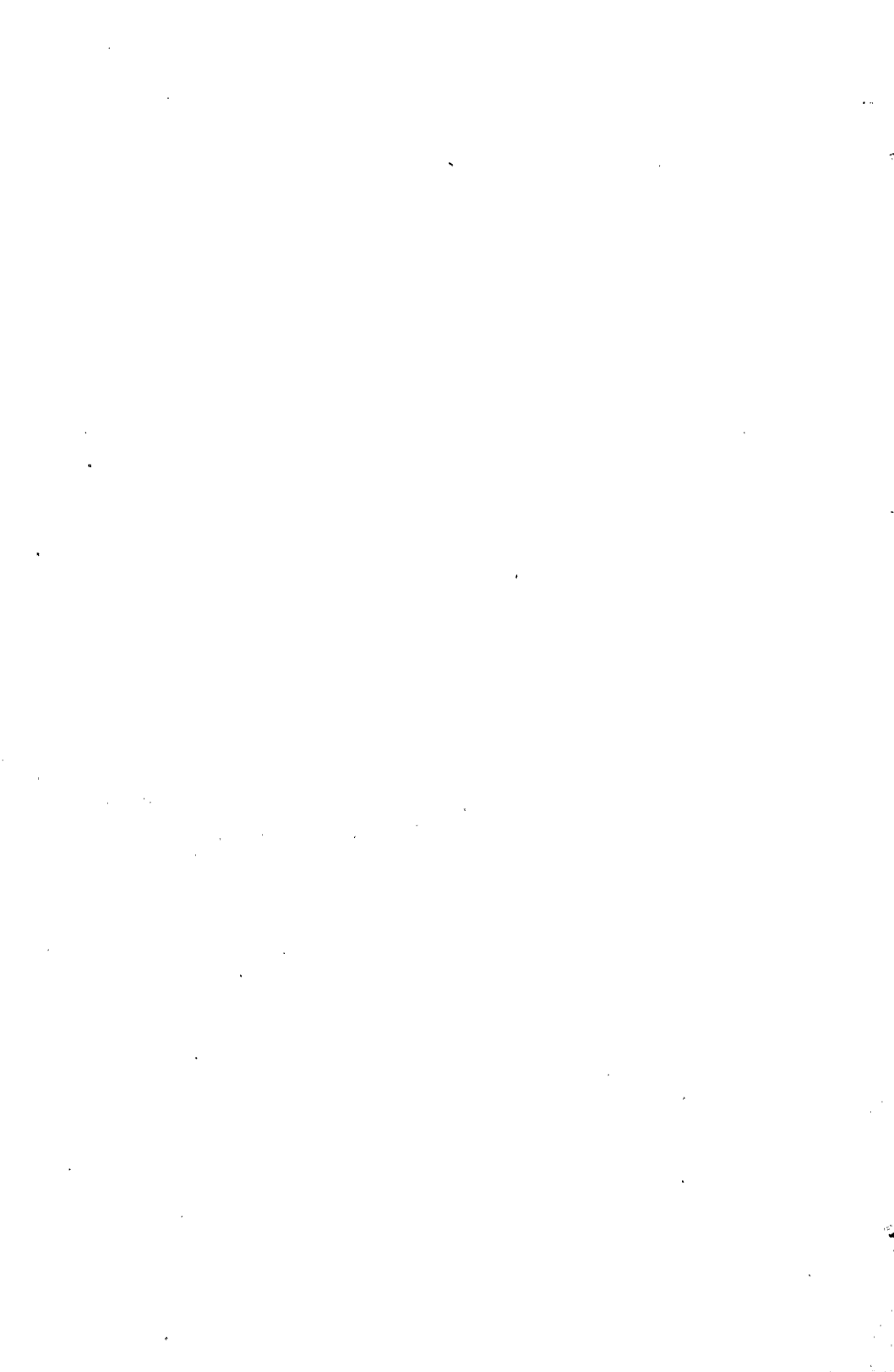
family. The 83rd Raja, Jai Mal, seems to have flourished during the period when Baber defeated Mahommed Lodi\* and appointed Darya Khan governor of Behar (1529) and the 86th Raja who obtained the title of Maharaja was Kallyan Mull who flourished in the reign of Akbar in 1600 A.D. and made Kallyanpur his seat. The 87th in descent, Khemkaran, obtained both the title of Maharaja Bahadur and Shahi in the reign of Jahangir 1625 A.D. The 95th who flourished in about 1719 was Maharaja Jubraj Shahi who wrested Pergannah Seepah, which still forms a portion of the Raj, from Raja Kabul Mahmud of Barheria and the 98th Maharaja Sirdar Shahi who flourished till 1747 invaded the principality of Majhauili, in Gorruckpur, and demolished their fortress. One of the conditions on which Sirdar Shahi made peace with the Majhauili Raja was that the latter was not to go about with *Nishan* and *Dunkas*, ensigns of Rajaship, until he had re-taken these by force from the Hosseypore (Hutwa) Rajas. These Nishan and Dunkas of Majhauili are said to be still in possession of the Tumcohi Rajas, the elder branch of the Hutwa Raj family, residing in Gorruckpore District. The 99th of the line was Maharaja Fateh Shahi Bahadur who was a rebel against the British Government in 1767. At the end of the year 1767 when the Revenue Collector of Sircar Saran demanded rent on behalf of the Company Fateh Shahi not only refused to pay but gave fight to the Company's troops sent against him in consequence and it was with much difficulty that these troops succeeded in expelling him from Hosseypore and his Raj was farmed out by the Government. Fateh Shahi retired into the jungles bordering on the then Independent Dominion of the Vizeer of Oudh and the Province of Behar and commenced depredations making raids into the District, to plunder villages and stop the collections of revenue and killed the Government farmer Govind Ram. The Raj was then farmed out by Government to his cousin Babu Basant Shahi and one Mir Jhumla, both of whom he killed in a night attack and sent the head of the former to his wife at Hosseypore who with her husband's head on her lap ascended the funeral pyre entrusting his minor son, Mohesh Dutt Shahi to the charge of a Rajput feudal lord Dhuju Singh. By his secure position in the jungle Fateh Shahi baffled all attempts of the British troops to seize his person or to check his depredations. The Government of Warren Hastings declared Fateh Shahi to have forfeited his zemindary and wrote to the Nawab of Oudh to settle the part of the zemindary lying in his dominion with the Government farmer with whom the rest of his zemindary was settled; but nothing was done as the British Government was soon after deeply engrossed with

\* Copper coins of the Lodis are often found in these parts. The author found some as also the former D.S.P., Mr. Knyvett, near Katya outpost in 1898.

the rebellion of Cheyt Singh of Benares when Fateh Shahi with an enormous army again invaded the country, but was driven away after a hard struggle by the combined forces of Dhujjoo Singh and the English under Captain Lucas. Fateh Shahi at last became a *fakir* in 1808, after leading the life of a Robin Hood continuously for 18 years and a retired life for 24 years. The armour which he used to wear is said to exist still in the Tumcohi Raj.

In 1785 when Government granted the zemindary of Hosseypore to Babu Mohesh Dutt Shahi, son of Babu Basant Shahi, he died a little before the birth of his posthumous son (afterwards Maharaja Bahadur), Chatterdhari Shahi. On the 21st January, 1791, the Government of Lord Cornwallis conferred on Chatterdhari Shahi, a minor of five years old, the confiscated estate of Hosseypore which passed under the protection of the Court of Wards, then newly formed. The Government of Lord Auckland on the 27th February, 1837, conferred on Chatterdhari Shahi the title of "Maharajah Bahadur." Chatterdhari Shahi rendered valuable services to British Government during the Mutiny of 1857-58 by placing the whole resources of the Raj at the disposal of Government and, though a very old man, himself fighting against the mutineers and restoring peace and order in the District. As he died soon after the mutiny the British Government granted to his successor, the 100th in descent, Maharaja Rajendra Protap Shahi Bahadur, a perpetual rent-free *Taigir* in Shahabad, from the confiscated estates of the rebel Kuar Singh, yielding an annual rental of Rs. 20,000. Rajendra Protap Shahi was installed Maharaja Bahadur in 1858 and died in 1871. The great Hosseypore Raj case by which the Privy Council decreed the estate to be an impartible Raj descendible to the eldest son to the exclusion of all younger brothers took place in his time. He was succeeded by his son the late Maharaja Sir Krishna Protap Shahi Bahadur, K.C.I.E., the 101 in descent, under whom the prosperity of the Hutwa Raj reached its zenith. He died in October, 1896, leaving a son of four years old and a daughter, and the Court of Wards has taken up the administration of the Raj during the minority of the minor Maharaja Guru Mahadevasram Prosad Shahi.

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PROCEEDINGS  
OF THE  
ASIATIC SOCIETY OF BENGAL.  
FOR APRIL, 1903.

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The Monthly General Meeting of the Society was held on Wednesday, the 1st April, 1903, at 9 P.M.

THE HON. MR. C. W. BOLTON, C.S.I., I.C.S., President, in the chair.

The following members were present:—

Mr. S. Abdul Alim, Mr. C. G. H. Allen, Mr. I. H. Burkill, Mr. T. H. Holland, Mr. D. Hooper, Mr. H. E. Kempthorne, Mr. T. D. La Touche, Mr. C. Little, Mr. J. Macfarlane, Kumar Ramessur Maliah, Mr. H. H. Mann, Major F. P. Maynard, I.M.S., Major D. Prain, I.M.S., Dr. E. D. Ross, Pandit Yogesa Chandra Sastree, Dr. C. Schulten, Mr. E. P. Stebbing, Pandit Satis Chandra Vidyabhūṣaṇa, Mr. H. Wheeler, Mr. C. R. Wilson, Mr. H. C. Woodman.

The minutes of the last meeting were read and confirmed.

Fifteen presentations were announced.

Mr. M. Churchill Shann and Maulavi Syed Abul Aas were ballotted for and elected Ordinary Members.

The President announced that the Council had elected Mr. F. E. Pargiter, B.A., I.C.S., a member of Council and Vice-President of the Society, in the place of Col. T. H. Hendley, C.I.E., resigned.

The General Secretary reported that Mr. E. P. Stebbing, Natural History Secretary, had been appointed to serve on the Finance Committee of the Society during the present year.

It was announced that Col. T. H. Hendley, I.M.S., had expressed a wish to withdraw from the Society.

The General Secretary reported the death of Mr. W. Connan, an Ordinary Member of the Society.

The General Secretary reported the presentation of 27 silver coins from the Government of United Provinces of Agra and Oudh.

The General Secretary announced the presentation of three large photographs of Sculptures by Mr. A. E. Caddy.

The General Secretary read the following circular issued by a Committee of the British Association for the purpose of collecting photographs of Anthropological interest, forwarded by Mr. T. H. Holland, Director, Geological Survey of India.

## BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

### ANTHROPOLOGICAL PHOTOGRAPHS COMMITTEE.

*President:* C. H. READ, F.S.A., Pres., Anthr. Inst., British Museum, W.C.

*Secretary:* J. L. MYRES, F.S.A., F.R.G.S., Christ Church, Oxford.

This Committee was appointed by the British Association for the Advancement of Science in September, 1898, to provide for the "Collection, Preservation, and Systematic Registration of Photographs of Anthropological Interest."

A similar Committee on Geological Photographs was appointed in 1889, and has organised the valuable collection preserved in the Museum of Practical Geology. The Royal Geographical Society has gradually collected a large number of geographical photographs, many of which are also of anthropological interest. More recently the Hellenic Society has announced a large special collection for the use of students of the topography, civilisation and art of Greece. And the Anthropological Institute possesses a considerable collection of photographs, which have been lately mounted and classified; and has permitted the registration of these in the list of the new Anthropological Photographs' Committee.

The considerations which led to the appointment of this Committee are briefly as follows:—

(1) A very large number of Anthropological phenomena can only be studied in the field, or by means of accurate reproductions: but the latter are in many cases difficult to procure, except where typical ex-

amples have been regularly published; and even then it is frequently of advantage to be able to acquire separate copies of single plates or illustrations, for purposes of comparison, without breaking up a collection or a volume.

(2) On the other hand, most travellers, collectors, and museum officials find it necessary to make many photographic negatives in the course of their own work, for which they themselves have no further use, but which they would gladly make accessible to other students, if any scheme existed by which this could be done without trouble to themselves. Such negatives also accumulate, and take up valuable space; and are very liable to damage through neglect.

(3) Further, though many professional photographers in remote parts of the world have made admirable use of their opportunities of recording native types, customs, and handiwork, there has hitherto existed no single record of what has been done in this direction; with the result that valuable collections have remained practically inaccessible to those in whose interest they have been made. In the case of the Hellenic Society, already cited, the inclusion, in the reference collection, of selected prints from the negatives of professional photographers abroad has been found to be of great advantage to teachers and students; who consult it with the view of choosing the best representations to add to their own series.

What appears therefore to be required is, in the first place, a Register of the photographic negatives which can be made generally available, illustrated by a permanent print from each, preserved at an accessible centre; together with an arrangement by which properly qualified students may be enabled to have duplicate prints made from them for their own use, at a reasonable price. In any such scheme it would be understood that the copyright, for purposes of publication, would remain with the owner of the negative, and that all duplicate prints distributed under this arrangement would be subject to that qualification.

In establishing such a Register or Collection of Anthropological Photographs, the Committee invites the co-operation of all owners of suitable photographic negatives, who are requested to submit for registration one unmounted print from each negative (which will be mounted by the Committee and preserved either at the office of the British Association, or in some central and accessible place); together with a full description of the photograph. The latter should state, as on the form appended:—

- (1) The subject of the photograph, and the place where the original is (or was) to be found.
- (2) The name and address of the owner of the negative.

- (3) The whereabouts of the negative itself ; i.e., whether it is retained by the owner, or deposited with a professional photographer or with the Committee.
- (4) The terms on which prints, enlargements, and lantern slides will be supplied when ordered through the Committee.

The Committee has made arrangements for the storage, and insurance, of any negatives which may be deposited on loan ; and for the production of prints and lantern slides from them to order : and a number of negatives have already been so deposited.

Additional copies of the form appended may be obtained from the Secretary to the Committee, MR. J. L. MYRES, Christ Church, Oxford, or from the office of the BRITISH ASSOCIATION, Burlington House, London, W.

The General Secretary read the following appeal from the Committee of the Memorial Fund to the late Dr. R. Rost.

#### MEMORIAL

TO THE LATE

DR. R. ROST, C.I.E., LL.D., M.A., Ph.D.,

LIBRARIAN TO THE INDIA OFFICE.

Dear Sir,

The undermentioned Committee has been formed for the purpose of collecting subscriptions to erect a Memorial Tablet or a Bronze Bust to the Memory of the late Dr. R. Rost, the eminent Oriental Scholar, who for so many years held with distinction the Librarianship of the India Office, and at all times rendered such valuable help to Students and to Oriental researches.

It is proposed to erect the Memorial in the India Office Library, and permission to do so has been obtained from the Secretary of State for India.

The Honorary Secretary to the Fund will be glad to hear at an early date if you wish to participate in this Memorial.

A Subscription Form is annexed.

Yours faithfully,

The Committee :

THE RIGHT HON. LORD AVEBURY. PROFESSOR T. W. RHYS DAVIDS.

SIR GEORGE BIRDWOOD, K.C.I.E. SIR JOHN JARDINE, K.C.I.E.

DR. JAMES BURGESS, C.I.E. C. P. LUCAS, Esq., C.B.

REV. J. ESTLIN CARPENTER, M.A. DR. M. A. STEIN.

C. G. LUZAC, Esq., *Honorary Secretary and Treasurer.*

The Philological Secretary read abstracts from a report by Sir Charles Lyall, the representative of the Government of India at the last Congress of Orientalists, which was held at Hamburg in September, 1902. A copy of the report was forwarded to the Society by Government:—

6TH DECEMBER, 1902.

SIR,

I have the honour to state that, in accordance with the request conveyed in your letter of the 3rd June, 1902 (R. and L. 7231 1902), I attended the XIIIth Congress of Orientalists, held at Hamburg from the 4th to the 10th September inclusive.

Although I was the only official representative of the Indian Government present, the Congress was attended by several gentlemen either now or lately in Indian service. On the whole, however, the number of representatives of India present was less than at previous Congresses.

The business of the Congress commenced with an informal meeting on the evening of the 4th September, followed by a formal opening on the morning of the 5th, after which the sectional sittings proceeded uninterruptedly (with the interval of Sunday the 7th) until the 9th inclusive. The 10th was devoted to the final general meeting called to consider the resolutions passed in the Sections. The time available was thus rather short—only half that allotted to the XIIth Congress at Rome in October 1899—and it was not possible, as on the last occasion, to attend continuously more than one Section. I was able, however, to be present at most of the sittings of the Indian Section (II. A), and at some of those of the Islamic Section (VI).

In the Indian Section on the afternoon of the 5th September I read Dr. G. A. Grierson's Report on the present stage of his work on the Linguistic Survey of India (copy attached), and presented to the Congress the two volumes (No. III. Tibeto-Burman: Bodo, Naga and Kachin languages, and No. VI. Indo-Aryan: Eastern Hindi) which had been completed since the XIIth Congress was held at Rome in 1899. A vote of thanks to the Indian Government for the organization of this splendid work was unanimously passed by the Section, and their best wishes were ordered to be conveyed to Dr. Grierson for the successful completion of his great undertaking.

On the afternoon of the 6th September, before the combined Indian and Central Asian Sections, Dr. M. A. Stein delivered a lecture on his journey of archaeological exploration in Eastern Turkestan, and exhibited a number of beautiful lantern views of the scenes visited and objects found during his expedition. He also showed a select collection of the antiquities



and specimens of writing brought back by him. I think I may say that this lecture was one of the most interesting and most appreciated features of the Congress. A resolution expressing the thanks of the Congress to the Government of India for the encouragement to Oriental research given by their support of Dr. Stein's expedition, and appreciation of the highly important results achieved, proposed by Professor Henri Cordier, of Paris, and seconded by Professor Macdonell, of Oxford, was passed, which, having been confirmed by the general meeting at the end of the Congress, will be noticed further on.

A meeting was held on the 8th September of the International Committee of the India Exploration Fund, at which I presided. Little in the way of collecting subscriptions for this object in the countries representatives of which attended had been possible during the years which have elapsed since the Rome Congress of 1899; but the proceedings taken were described, and further measures likely to promote the interest of the Fund discussed. It was resolved to invite the general meeting to re-appoint the committee.

Professors Kuhn and Scherman, of Munich, laid before the Indian Section a report on the progress made with their Indian Bibliography, to which a subvention has been promised by the Secretary of State for India in Council.

I annex to this report extracts from the 10th Bulletin of the Congress setting forth the resolutions formally passed at the general meeting of the 10th September, so far as they touch on subjects of interest to the Indian Government.

Resolution No. 14 deals with the newly established "International Association for the Exploration of Central and Eastern Asia," with headquarters at St. Petersburg.

Resolution No. 15 deals with the publication of the Proceedings of the Congress. It will be seen that it has been decided no longer to publish communications *in extenso*, and it may be expected that the abstract of Proceedings which, under the new arrangement, will form the record of the Congress, will be received at an early date.

I have, etc.,

C. J. LYALL.

The Under Secretary of State  
for India.

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*Resolutions of the XIIIth International Congress of Orientalists, passed at the General Meeting of the 10th September, 1902.*

No. 3. The combined Indian, Central Asian, and Far Eastern Sections of the XIIIth International Congress of Orientalists, held at

Hamburg, beg to express their thanks to His Excellency the Viceroy and the Government of India for the great encouragement they have extended to Oriental learning and research, by granting to Dr. M. A. Stein the necessary leisure and means for the prosecution of his recent explorations in Eastern Turkestan. The thanks of the XIIIth International Congress of Orientalists are equally to be conveyed to Mr. G. Macartney, C.I.E., the political representative of the Government of India at Kashgar, and to the Mandarins Pan-Darin and Khan Daloi, of the Provincial Government of Chinese Turkestan, for the very effective help they had given to Dr. Stein in the course of his archæological and geographical explorations about Khotan, as well as to Mr. Petrovsky, the Imperial Consul-General of Russia at Kashgar, for the valuable assistance rendered by him towards the safe transport of Dr. Stein's collection of antiquities, from Turkestan to Europe. They desire at the same time to express their appreciation of the highly important results which have rewarded the labours of the scholar selected by the Government of India, and which represent an ample return for the outlay incurred, owing to the practical nature of the operations conducted by him. They would also venture to express the hope that facilities will be given to him for completing the publication and elaboration of the results obtained, and that the Government will be pleased to sanction any necessary extension for this purpose of Dr. Stein's present deputation. Finally, they venture to express the hope, that when circumstances permit, the interest of archæological research will be allowed to benefit by Dr. Stein's special experience and previous knowledge, which are likely to facilitate considerably the further explorations which it is desirable should be entrusted to him in the interests of India.

No. 5. (Translation). The XIIIth International Congress of Orientalists is requested to nominate afresh the committee appointed in Rome to promote the establishment of the "India Exploration Fund," and to instruct it to report to the next Congress the results of the action taken by it.

Agreed to on the 10th September, 1902.

No. 6. The Indian Section of the XIIIth Congress of Orientalists at Hamburg has received, with the greatest satisfaction, the report on the progress of the proposed "Manual of Indo-Aryan Bibliography," edited by Professor E. Kuhn and Professor L. Scherman, laid before the Section by Professor Kuhn.

The Section wishes to convey their best thanks to the Government of India for the subvention of this undertaking, so important for Indian studies, and recommends it to the support of learned Societies.

No. 8. Read a report on the resolutions of the committee appointed

to consider the necessity for a critical edition of the text of the Mahābhārata. Resolved :

That a competent scholar should be sent to India to collect the necessary MSS., and that Dr. Lüders should be selected for this work. The cost of this would be about 500, and the time required one year. Professor Bloomfield was authorised to represent this committee in America for the purpose of obtaining a contribution towards this amount.

No. 9. At the XIIIth International Congress of Orientalists held at Hamburg in September, 1902, Count F. L. Pallé, Professor of Sanskrit in the University of Bologna, having exhibited and explained in the Indian Section the highly interesting historical series of cartographic representations of India collected by him with infinite care and research, the Section expresses an earnest hope that means may be found to make this important set of maps generally accessible by publication to those interested in geographical and cartographic research.

No. 12. (Translation). In consideration of the circumstance that the same manuscript is often copied by several scholars, and published by them without knowledge of the work done upon it by others, the Chief Librarians of the University Libraries, College Libraries, and the British Museum are requested to have a record kept of each person who makes a copy of a MS., and to give information to any later copyist, on his application, as to whether, and by whom, a MS. has previously been copied.

No. 14. (Translation). On the 8th September, 1902, those members of the Committee of the "International Association for the Exploration of Central and Eastern Asia," appointed at the XIIth International Congress of Orientalists in Rome who were present at the XIIIth Congress in Hamburg assembled under the presidency of Dr. W. von Radloff (St. Petersburg). A draft of the statutes of the proposed association, prepared by scholars at St. Petersburg, was submitted for discussion, and settled paragraph by paragraph in French by the meeting.

The President having informed the meeting that he was authorised to state, on the part of the Russian Government, that that Government intended to constitute a Russian Committee of the Association, under the Jurisdiction of the Imperial Ministry for Foreign Affairs, the meeting resolved :—

- (1) To confirm the statutes of "the Association for the Historical, Archaeological, Linguistic, and Ethnographic Exploration of Central and Eastern Asia";

- (2) To entrust the members chosen at Rome, MM. W. von Radloff

and Serge von Oldenburg, with the formation of a Central Committee of the said Association; and

(3) To name the following members as representatives of the several countries:—

*France*.—MM. H. Cordier, E. Senart, and M. A. Foucher.

*Great Britain*.—Lord Reay, Professor Rhys-Davids, and Dr. A. Stein (India).

*Germany*.—Drs. R. Pischel, Grünwedel, Ernst Kuhn, and E. Leumann.

*Holland*.—Drs. Kern, De Groot, and De Goeje.

*Denmark*.—Dr. V. Thomsen.

*Sweden*.—Dr. D. Montelius.

*Norway*.—Dr. J. Lieblein.

*Finland*.—Dr. O. Donner.

*Austria*.—Ritter J. von Karabacek and Professor L. von Schroe-  
der.

*Hungary*.—Dr. A. Vambéry and Dr. Herrmann.

*Switzerland*.—Professor Ed. Naville.

*Italy*.—Professor L. Nocentini.

*America*.—Professor F. Hirth.

No. 15. Especially as experience has shown, that the publication *in extenso* of all the communications presented at the Congress can follow only so late afterwards that the contents of many contributions are overtaken by the advance in science before they can appear;

And whereas it would not be difficult for every contribution to be published in some one of special journals or periodicals where it would come more directly to the knowledge of those working in the particular subject.

Therefore the General Session of the XIIIth International Congress of Orientalists resolves that—

The issuing of the communications *in extenso* be given up. That the Executive Committee in Hamburg be entrusted with the duty of publishing within at least six months, the essential points of those contributions and discussions, of which a *résumé* is handed to the General Secretary within one month after the close of the Congress. The length of the single *résumés*, so far as possible, shall not exceed two printed pages, of the form and size of the previous reports. The Congress requests that the Board of Directors of the German Oriental Society lend their aid to the Executive Committee in Hamburg in the matter of publication.

*Report on the Progress of the Linguistic Survey of India presented to the  
XIIIth International Congress of Orientalists.*

The Linguistic Survey of India has made considerable progress since I had the honour of submitting a report to the XIIIth Oriental Congress. I laid before that Congress two volumes, one containing the survey of the Bengali language, and the other a collection of various languages, spoken on the North-Western Frontier of British India. I have now the honour to lay before the present Congress two more volumes, one dealing with the Bodo, Nāga, and Kachin groups of the Tibeto-Burman family, and the other dealing with Eastern Hindi.

The Survey has now arrived at a stage at which I can forecast its extent, and the probable number of volumes which it will contain. Subject to subsequent revision, the following is the proposed list of volumes:—

Vol. I. Introductory.

Vol. II. Mōn-Khmēr and Tai families.

Vol. III., Part I. Tibeto-Burman languages of Tibet and North Assam.

Part II. Bodo, Nāga, and Kachin groups of the Tibeto-Burman languages.

Part III. Kuki-Chin and Burma groups of the Tibeto-Burman languages.

Vol. IV. Dravido-Munda languages.

Vol. V. Indo-Aryan languages, Eastern group.

Part I. Bengali and Assamese.

Part II. Bihārī and Oriyā.

Vol. VI. Indo-Aryan languages, Mediate group (Eastern Hindi.)

Vol. VII. Indo-Aryan languages, Southern group (Marāṭhī.)

Vol. VIII. Indo-Aryan languages, North-Western group (Sindhī, Lahndā, Kashmīrī, and the "Non-Sanskritic" languages.)

Vol. IX. Indo-Aryan languages, Central group.

Part I. Western Hindi and Panjābī.

Part II. Rājasthānī and Gujarātī.

Part III. Himalayan languages.

Vol. X. Iranian family.

Vol. XI. "Gipsy" languages and supplement.

As regards the progress made in these volumes:—

Vol. I. must naturally wait till all the rest has been finished.

Vol. II. is complete in manuscript, and is now in the press.

Vol. III., Part I., is in the competent hands of Professor Conrady. If he is at the Congress he will be able to report the progress which he has made.

Part II., has been printed, and is ready for issue, save for a few corrections, and for the maps which are still with the printer. This is one of the volumes which (without the maps), I have the honour to lay to-day before the Congress.

Part III., is complete in manuscript, and is now in the press.

Vol. IV., has not yet been touched.

Vol. V. Both parts are complete, and in the press. They are nearly printed off.

Vol. VI. This is complete. It is one of the volumes which (without map) I have the honour to lay to-day before the Congress. The map has been passed for press, but could not be issued in time for the Congress.

Vol. VII. This is complete in manuscript.

Vol. VIII. This has not yet been touched.

Vol. IX. In Part I. Western Hindi is rapidly approaching completion in manuscript. Panjābī has not yet been touched. In Part II. "Gujarātī" includes the Bhil languages and Khāndēśī. These two have been finished in manuscript. The rest of Gujarātī and Rājasthānī have not yet been touched. Part III. has not yet been touched.

Vol. X. This is nearly all in type.

Vol. XI. Not yet touched. By "Gipsy" languages, I mean the various secret languages, spoken by the numerous wandering tribes who are found in all parts of India.

Such satisfactory progress could not have been made had it not been for the help which has been given to me by my Assistant, Dr. Sten Konow, and I am glad to have this opportunity of gratefully acknowledging it. Much of the success of the Survey will be due to his learning and indefatigable industry. While almost every page of the Survey which has been prepared up to the present date has passed under the eyes of us both, he is specially responsible for the sections, dealing with the Kachin and Kuki-Chin Groups, for Marāṭhī and for the Bhil languages and Khāndēśī. I hope that, after the Congress, he will be able to prepare the sections dealing with the Munda and the Dravidian languages.

Of the volumes which have been completed, those dealing with the

Indo-Chinese languages have presented far the greatest difficulties. Specimens of numerous languages which were hitherto almost unknown have been prepared, and have been illustrated by short grammars and vocabularies. That the result has been altogether satisfactory cannot be maintained. Students of languages will not require to be told of the difficulties which are experienced in reducing an unknown language to writing for the first time. Moreover, few of the specimens were recorded by scholars. Many of them were obtained by Government officials, who were ignorant of the languages dealt with, and had to trust to uneducated interpreters. Mistakes were, therefore, almost inevitable. No other method was, however, possible for obtaining specimens of the tongues of some of the wild tribes who inhabit the eastern frontier of India, and I am fully sensible of the care and enthusiasm which have been displayed by many of my brother officials in their collection. On the whole, considering the means at their disposal, the various specimens have been found to be surprisingly correct. Although absolute accuracy has not been attained, a great step in advance has been made in our knowledge of the languages of a number of little known Indo-Chinese tribes. For instance, Dr. Konow has been able to make a satisfactory grouping of that mass of kindred languages which goes under the name of Kuki-Chin, and this volume will be one of the most interesting of the Survey. Thanks to friends, it has been found possible to give some account of the dialects of the interesting Khassi language, one of which employs infixes as well as prefixes in its word-formation, and thus throws considerable light on the structure of the speeches of the Mōn-Khmēr family. Through the kind help of Sir Charles Lyall, a full account has been given of Mikir, one of the most important Tibeto-Burman languages of Assam, about which very little has hitherto been known. Finally, an attempt has been made to give a description of Ahom, the ancient Tai language of Assam, now for many years extinct.

Dr. Konow has been able to finally place Marāṭhī in its true relation in regard to the other Aryan languages of India, and has incidentally thrown much light on the relationship of the various Prakrit dialects to each other. A summary of the results of his enquiries will shortly appear in the "Indian Antiquary." He has also succeeded in classing the Bhil languages. These are certainly closely connected with Gujarāṭi. Towards the south they borrow a little from Marāṭhī, but the basis of their language is still Gujarāṭi. Closely connected with the Bhil languages is Khāndēśī, which can no longer be considered to be a dialect of Marāṭhī as hitherto supposed. None of the Bhil languages shows any traces of connection with the Muṇḍa tongues, except a very few words which have survived in their vocabulary.

I have every confidence that I shall, if all goes well, be able to report the completion of the Survey at the next Oriental Congress.

GEORGE A. GRIERSON.

CAMBERLEY,

30th August, 1902.

The following papers were read:—

1. *An ancient cave and some ancient stupas in the District of Gaya.*—By PARMESHWAR DOYAL. Communicated by the Philological Secretary.

2. *On two remarkable rain-bursts in Bengal, and some of the more prominent features of the monsoon season in Northern India in 1902.*—By C. LITTLE, M.A.

(Abstract.)

The paper on two remarkable rain-bursts in Bengal, etc., is divided into three parts. The first contains a few general, and in some cases, explanatory remarks of an introductory character. In the second, all the information available collected chiefly from published reports regarding two of the most extraordinary disturbances in the writer's experience, is given, arranged in tabular form and accompanied by brief remarks. These disturbances, in his opinion, entered India from Central Asia and were, he believes, the direct cause of most important changes in monsoon conditions in Northern and Western India. One of the effects of the disturbances was the heavy bursts of rainfall in Bengal Proper and Assam. The first of these bursts began suddenly and ended as suddenly on the 30th June. The other occurred with equal suddenness on the 11th August. The immediate effect of the first general disturbance was the commencement of what is called monsoon weather over the whole of Northern India as far west as the Simla Hills. The effect of the second was, he believes, that extraordinary change which occurred in Western India when on the twelfth stroke of the hour a large part of the Empire was saved from a renewal of devastating drought.

In the third part the writer has attempted to show how these two disturbances divided the past monsoon season into periods, during each of which the line of advance of cyclonic storms from the Bay had a marked peculiarity. It is a matter of common knowledge that in each of these periods there was an exceptional distribution of rainfall, shown by excess in one part and great defect in another. What is suggested is that this abnormal distribution of rainfall, must be due to the same causes as the eccentric behaviour of the cyclonic storms, generally called recurving; and that it is a matter of first class importance that the problem of the recurving should be investigated and solved. Being a definite



problem it must have well defined, and ascertainable data, and quotations are given supporting the opinion that these data are not indicated by ground level observations. Further as all the variations occur within the Indian boundaries the necessary information is probably available without reference to foreign sources.

3. *Economic Entomology: Its study, aims, and objects.*—By E. P. STEBBING, I.F.S., F.L.S.

The necessity for the serious study of Economic Entomology in a great agricultural country like India has forced itself into prominence during the last few years, and now that active steps are being taken in the matter it may prove of interest to consider what such a study really involves and the nature of the results to be expected from it.

Economic Entomology may be defined as the study of the life-histories of Injurious Insects with a view to instituting remedial measures against them. As we shall see later, this latter branch of the subject involves the study of, firstly, the life-histories of insects predaceous upon, or parasitic upon, or in, the pests; and, secondly, the experimenting with various insecticides with a view to testing their practical efficiency before recommending them for general use. The aid of the Economic Botanist will be required to identify Insect fungi which may live as parasites upon our insect foes; for the study of such and the preparation and stocking of cultures may give us a terribly efficient weapon against these minute enemies. The mention of the Economic Botanist leads me to a small digression. It has not, I think, been generally understood in India, and the country by no means stands alone in this respect, that there is a vast gulf between the Science of Botany and that of Entomology and consequently between the Botanist and the Entomologist. I allude here only to the economic aspect of the work in both cases. No man can hope to be an expert in both save in some small country and area whose flora and insect fauna are already known. In India this ideal state of affairs is very far ahead. The fields before both experts are vast and almost untouched and require years of patient working and observation to achieve the results that will be of such benefit to the country at large. The man who endeavours to specialise in both may do well enough as a beginning, just as one man can run the secretariat of a budding State. As the latter flourishes the one-man rule has to give way, departments are formed, and the work parcelled up. The revenue man, receiving a paper on financial matters, promptly labels it 'Finance' and sends it off to its proper quarter. The Economic Botanist and the Economic Entomologist are in much the same relation to one another. They can help each other, but each requires all his time for his own particular subject, and, if a true

specialist, makes no pretence at working in a line foreign to him. The difference may be said to be almost equally wide between the Economic Entomologist and the Museum Entomologist. The latter especially interests himself in the classifications of insects, gives names to new genera and species; considers, in the light of fresh discoveries, the re-arrangement of the grouping of families or the formation of new ones, etc., and keeps watch over the valuable type collections of the nation, all work requiring careful training, deep reading, much microscopic labour, and an enthusiasm for the subject. The Economic Entomologist, on the other hand, studies insects from a very different point of view. His aim is to find out where the insect lives, what it feeds upon, the periods spent in the various stages of its life-history, *i.e.*, how long it spends in the egg-stage, grub-stage, etc. Whether at one time of the year it lives upon a certain kind of crop, changing its food plant later on or seeking neighbouring patches of scrub jungle to lie up in when the fields of the plant it is partial to are lying fallow. This knowledge enables him to draw out his plans for attacking noxious pests. To him the fact that the insects he has discovered and is studying are new to science is, though interesting, quite of secondary importance. Their habits and life-histories and the best means of combating them are his chief concern. To his companion in the Museum he leaves the other portion of the work.

With this brief digression we will now devote ourselves to a consideration of how the Economic branch of the science, or the work in the field, can best be studied, our object being the protection of vegetation of use to man by discovering means to check undue increases of noxious insect pests.

With reference to the position of the *Insecta* in the Animal Kingdom. Perhaps if I say here that insects lie roughly halfway up the scale, *i.e.*, halfway between the simplest animal, the one-celled *Amœba* and that highly and complexly constituted being known as Man, having as near relatives the crabs and lobsters, spiders and scorpions on the one hand, and the centipides, and millipedes and, still higher up, the starfish on the other, their position will be sufficiently defined for our present purpose.

In dealing with the subject it will be necessary to first consider briefly the stages in the development of an insect. We all know what such an animal is like and he who lays no claim to the slightest acquaintance either with their classification or varied modes of life is able in the generality of cases to recognise an insect. The ordinary layman equally knows that an insect passes through various stages of development. The gaudy butterfly, gracefully floating on azure wings in the brilliant sunlight, does not come into being as such and its transcendent beauty can no more be perceived in its earlier stages than can the glorious levelness

of budding girlhood be traced in the baldheaded, toothless, newly-born babe. Both are slowly developed. The insect commences life as an egg. From this egg hatches out a grub which in form is often totally unlike the future adult. It is in this grub stage that all increases in size usually take place. The grub changes to a pupa or chrysalis, a resting stage, during which the insect does not feed and usually remains quiescent. In this stage of rest the internal complex organs arrive at maturity and the wings are acquired. When this development is complete the insect emerges in its adult or perfect form and subsequent to this all further growth ceases. Any common butterfly goes through these changes. This state of affairs is, however, not always fully carried out, as in some Orders of insects the third or pupal stage is absent. In these cases the young ones on hatching out from the egg usually resemble the parents in form, but not in size; the wings are always absent and colouration and markings may undergo modifications. Such insects acquire their wings and full size by a series of moults, the outer skin being shed at intervals, the last moult producing the perfect insect with fully-developed wings. The common North-West or Migratory Locust (*Acridum peregrinum*) is an instance of this mode of growth. There is one more point in connection with the structure of insects to which attention must be drawn, a most important one since, as we shall see later on, on it depends the nature of the remedies we bring into force to combat serious attacks. This important point is the form of the mouth parts that may be present. In this respect insects may be roughly divided up into three groups according as to whether they have a mouth formed for biting, for sucking, or a combination of the two. In the biting mouth, biting jaws or mandibles are present, by means of which the plant tissues are bitten through before being devoured. Instances of such a mouth may be seen in the locust or any common beetle. In the sucking mouth the biting jaws are absent or are mere rudiments and the mouth consists of a long tube or proboscis often furnished with one or more piercing organs to enable the insect to pierce through tissues of plants and then insert the tube and suck up the sap. Bugs, plant lice, and scale insects have such a mouth. In the biting and sucking mouth both mandibles and the sucking tube are present, as may be seen in the common bee. As I have said, these different forms of mouth bear a constant and definite relation to the method of life and feeding operations of the insect and therefore to the methods that can be introduced to combat its attacks. We are now in a position to consider the first step—the study of the life-histories of pests.

It may be taken as a cardinal point in remedial work that the more one knows about the habits and life-history of a given species of insect

the better are the chances of discovering a cheap and efficient remedy or controlling it.

Many insects, for example, can be dealt with only in the active feeding condition; with others the eggs are the easiest destroyed, whilst in others again the quiescent or over-wintering stage is the easiest disposed of. We must therefore be able not only to recognise it in its different stages, but must know just how long it remains in each and just how it comports itself in each. Each new insect which makes itself unpleasantly prominent must be studied throughout its life round before we can say that we know best how to fight it, and when commencing the work in a new country this investigation into the pest's life-history is the point from which we must start.

I have said that the Insect must be studied throughout all its stages of egg, grub, pupa and adult, *i.e.*, through its life cycle, and this in itself is no light task, as it requires high powers of observation and much patience in investigation work, which may have to extend over several years.

Unfortunately, however, when the life cycle has been watched through the work is often by no means complete for the particular insect under surveillance may pass through several such in the year, and this is more particularly the case in tropical countries. In our own Northern clime (England) some insects in favourable seasons may pass through two life cycles in the year—one in the spring or early summer, a second in the late summer or autumn. But this is nothing to what happens in tropical countries. In such the life cycles are greatly increased and three, four, or even as many as seven or more, generations of a pest may be run through in the one year and to add to the perplexities and worries the study of such entails the insects of the various generations or cycles may vary in appearance, sometimes in a marked degree. For example, many Indian butterflies have received different names from eminent scientists owing to their great variations in markings, colouration, and even shape in the various generations they pass through in the year; the subsequent study of their life-histories has shown them to be but the spring and summer forms of one and the same insect. Thus the Economic Entomologist is able to help and set right the work of his museum comrade. But this forms by no means the sum total of the vagaries of Insect life. We have seen that an Insect may have several life cycles in the year the individuals in which may vary in colour, shape, etc. But others go further and spend one of their life cycles on one portion of a plant, *e.g.*, on the leaves and twigs above ground; whilst the other is totally unlike the first in appearance and may be spent on the roots.

The well-known *Phylloxera* of the vine is an insect of this kind and for years the root-feeding form was described as a different species. Again there are other insects which at one stage of their life-history are able to produce young in large numbers parthenogenetically, these maturing very rapidly and doing the same in their turn, the process continuing for several months on end from the spring to autumn. At this latter season a sexual generation is produced which lays the winter eggs, which in the succeeding spring gives rise to the parthenogenetic females. It thus becomes obvious that the efficient study of Economic Entomology requires a previous very considerable and intimate acquaintance with the habits of the different groups of Insects and also requires one to be prepared for the startling vagaries the effect of a semi-tropical or tropical climate has upon them in their various life cycles. It is this that makes it difficult, if it does not lead to absolute confusion, to make use of observations and remedial measures which have been worked out or found effectual in other countries. The theory that what holds good for, say, Europe or America, will be equally applicable in a country like India is a fallacy which cannot be too widely exposed. To act on the assumption that because an Insect has such and such a life-history in, we will say England or North Europe, appears at such and such times, etc., that therefore we know the life-history of that same insect (for some pests are cosmopolitan in their range) or of closely allied forms, in a country like India is not only to involve the science in a dangerous and hopeless medley of inaccurate postulations and assumptions, but also to risk wasting large sums of money in endeavouring to combat pests who are not at the time in the stage at which the remedial work has a chance of meeting with success, and whose life-history in this country is quite different to what it is supposed to be from European analogies. A well-known and experienced Entomologist, Mr. Walter F. H. Blandford, who worked at Economic Entomology for the India Office for several years and consequently obtained a wide knowledge of this phase of the subject, used to continually reiterate his warnings as to the danger of taking anything for granted in a country like India, and my own experience has proved over and over again the justice of his contention. The Economic Entomologist in India must go into the field or orchard, plantation or forest and study the pest carefully on the ground though the ins and outs of a series of life cycles before he can safely prescribe remedies on a large scale. Even in the outer Himalayas, where conditions are more similar to Europe and North America, the investigator must proceed warily and deduce nothing 'because it is so in Europe' without first carefully verifying his opinions by observation.

We have seen that the study of Economic Entomology first prescribes a knowledge of the life-histories of noxious pests and that this is the first work to be taken in hand. Having made ourselves acquainted with these, we are now in a position to consider what remedies may be introduced to combat them.

It may be said, the question has been pertinently asked very often, 'But why bother about remedies from whose introduction a very problematical good is to be derived, when India has gone on all these years without them'? I would retort that the world went on for a good many centuries without the telegraph and railway, that Englishmen managed to exist in some comfort in Calcutta for considerably over a century without the electric fan and light and yet no one doubts their usefulness and necessity at the present day. The agricultural requirements of the country have not stood still; they have advanced. The study of the science under consideration has become of such importance owing to the large increase in the cultivated tracts in the country and to the much larger development in this respect which the great irrigation schemes promise. It is an axiom in Economic Entomology that to increase the food-plant of an insect over large contiguous areas is to increase the numbers of the pest itself since finding so much of its favourite food close together enables it to increase with ease, the usual checks it would have to overcome in its natural surroundings being absent. It will be obvious to everyone that a large irrigation scheme will help the insect to perfection. We come then to the question of remedies. Remedial measures divide themselves into two groups:—

- (1) Those applicable through the agency of man.
- (2) Those which Nature herself puts into force to prevent, or bring down to normal proportions, undue increases of any particular members of her animal kingdom.

The first group, the question of remedial measures to be introduced by man's agency, will be considered in detail later on, but we may show briefly here *en passant* how the knowledge of the life-history leads to, or suggests one class of remedy to be employed. We have seen how the mouth parts in insects vary, some being furnished with a biting mouth, whilst others have a sucking one. Now the presence of one or the other of these forms of mouths will decide, in the case of the insecticide sprays, the nature of the spray to be used. The obviousness of this will be evident when it is mentioned that some spraying mixtures are merely contact ones, whereas others must be taken internally to have killing effects. The first are used against sucking insects which have usually soft bodies, their spiracles, or air-breathing openings at the side of the body, being large and exposed. It is useless using a poisonous spray

requiring to be taken internally, against such insects since they feed by suction, inserting their proboscis into the tissues of the plant. A liquid, which merely coats the external surfaces, will not be taken internally and will not therefore affect the insect. If, however, a liquid of a thick soapy nature, *e.g.*, such as kerosene emulsion, is sprayed upon the plant it will thickly coat the leaves and stems and cover and clog up the breathing openings of the sucking insects feeding upon it and suffocate and kill them.

The second class of spraying solutions alluded to—the poisonous ones—are for internal application. They are for use against insects with biting mouth parts. These are often hard bodied externally and would not be affected by the soapy liquids. In feeding upon the leaves, etc. which have been sprayed over with the poisonous mixture they take the poison internally and are got rid of.

We shall refer to other remedial measures applicable by man later on. The above two have been touched upon to show how the class of remedy employed may depend entirely upon the structure and manner of feeding of the insect. It will, however, be obvious that neither of the two above mentioned remedies would be of the slightest use against a pest which spends its life inside the stem of a plant or beneath the bark of a tree, or the dangerous portion of its existence buried in the ground feeding upon the roots. We shall consider methods of combating such attacks at greater length later on.

We now come to the question of natural remedies or nature's checks. These may consist of parasites, either insect or fungus. Such checks follow nature's laws and pertain to her department, but it may be shown that such can, when thoroughly understood by man, be assisted and spread by his agency.

It is probable that most insects are subject to these natural checks, *i.e.*, that most insects have at least one insect parasite preying upon them and some may be subject to several. These natural checks are of two kinds—the parasitic forms and the actively predaceous forms.

The parasitic forms live as true parasites inside the bodies of their hosts. Examples of such are the Ichneumon flies, Chalcid flies, and Tachnid flies—all exceedingly common and numerous in India. Important as they are however to man, but little is at present known about them in the country and our knowledge is not at present sufficient to make any successful use of them.

The predaceous group comprises those insects which actively prey upon species of their class, feeding externally upon them, living in the same haunts, and passing very similar lives. These are very commonly mistaken for noxious pests by the uninitiated; in fact, it may be said

that this is the rule in India. It is the old fable of killing the goose which lays the golden eggs; for the want of elementary knowledge in this respect undoubtedly leads to the extermination of many of man's friends. These predaceous insects are often sent to the Museum as injurious to crops, etc., when they have probably been doing, as far as in them lay, the greatest good by keeping within bounds the much less obvious crop pest in the fields. Two instances of this nature may be quoted here:—

A certain beetle, by name *Cicindela punctata*, one of a family known as the Tiger beetles owing to their predaceous proclivities, is common in India. Both in its grub and mature beetle stage it actively preys upon other insects and at times is to be found swarming in fields under crops. As the insect is brightly coloured and very active, flying and running well, it is very conspicuous, and if the crops are suffering from the attacks of insect pests the cultivator at once jumps to the conclusion that the easily seen and numerous tiger beetle is the cause. If he has heard that insects are at times a source of danger, he at once proceeds to kill off as many of what are really his friends as he can. The real cause of the damage is probably some small inconspicuous insect which escapes his notice, but upon which the tiger beetle is actively feeding.

The second instance I will quote is to be found amongst the ladybird beetles (*Coccinellidæ*). Most people know what a ladybird beetle is like, the little oval, reddish, brightly-coloured insects with spots on their back of our childhood and nursery days. The greater bulk of these seemingly harmless insects are eminently predaceous, both as grubs and beetles. Plant lice, scale insects, etc., form their bill of fare and they suck them as dry as one would suck an orange. One of these insects has earned for itself a world-wide reputation, having been imported by the Americans into the Florida orange groves at a time when the orchards were so badly attacked by the fluted scale insect that trees were dying in hundreds and the industry seemed threatened with extinction. The importation of the ladybird beetle and the business-like way it set about clearing the trees of the scale saved thousands of pounds worth of capital and many homes from ruin.

Observations are showing that these ladybird beetles are likely to play an important part in India in the future in the hands of the Economic Entomologist, for there is no doubt that we have many valuable species in this country which only require proper investigation to prove most useful and deadly weapons when wielded by the expert. Once their life-histories have been studied and the localities they live in have been ascertained, it will be a simple matter to arrange for obtaining consignments for distribution to areas where it has been proved that their intro-



duction will be of great value. It should be pointed out, however, and the point is an important one, that such weapons should only be made use of by those thoroughly conversant with them and that the importation of such insects into localities should not be attempted until it has been ascertained that there are no local beetles already performing this work. A large sum was expended by Southern India planters in importing a ladybird beetle from Australia to clear off the coffee scale. No result happened, as the business was not in the hands of an expert who would have conducted things properly, and the money was wasted. Attempts of this nature made by those who do not understand what is required to be done nor how to do it only bring such work into disrepute.

We now come to a further consideration of the remedies applicable by the agency of man and here we meet a subject about which little is at present known in India. This being so it would be a useless waste of time going into a long dissertation upon the various kinds of spraying mixtures (already alluded to shortly above) and special spraying machines, the various appliances for using gases to kill scale insects, and other up-to-date remedial measures chiefly introduced by Americans and largely in use in that country. Conditions are altogether different in India, the two chief difficulties against work of this nature being the great areas which have to be dealt with, and the ignorance, conservatism, and religious prejudices of the ryot.

But while we are not in a position at present to advise the application in India of these numerous and useful remedies, which are doing so large an amount of good in other countries, we may consider for a moment with profit the lines upon which we should advance.

Although a general use of sprays and spraying machines cannot be as yet advocated, it is not for a moment meant that in certain cases such will not be useful. Their practical utility and possibility must first, however, be experimented with and demonstrated by the specialist before they are introduced for general use to the ryot. For instance, to give one illustration. There is a beetle commonly known as the rice hispa (*Hispa senescens*) which commits, at times, great harm in the rice fields by feeding upon the leaves and reducing them to mere yellow bundles of the harder fibres of the leaf. Both the grub and beetle feed in this way upon the leaf. Now this attack is started by the beetle laying its eggs upon the leaves of the young rice seedlings whilst they are still in the small nurseries in which the young plants are reared before being put out into the fields. When the seedlings are transplanted out into the rice fields the beetle accompanies them either as a grub or pupa on the leaves and is thus spread widely all over the country. It goes through several generations subsequently upon the rice plants and at

times does great damage. This is, I think, a case for the effective use of a poisonous spraying mixture, as it could be easily applied whilst the seedlings are still in the nursery in small compact blocks and the attack could thus be checked in its initial stages. Once this treatment has been conclusively proved by careful experiment to be effective there can be no reason why the Bengal rice hispa should not be kept within bounds. Attention has been already drawn to the point which will bear reiteration that such experiments must be carried out by experts if they are to prove successful, otherwise they become objects of unmerited ridicule.

Another class of remedies which can only here be mentioned since nothing is known of their capabilities are the parasitic insect fungi. The locust fungus is a case in point. Much good has been attained by its use in some parts of the world, though in India it has been said to have been unsuccessful. I have experimented with it myself, using consignments from the Cape and America, and it is certainly deadly to small locusts and grasshoppers and I do not hold the opinion that it is useless for the purpose in view, *i.e.*, that of killing off locusts during big invasions.

There are, however, other forms of remedies entirely different from the above, measures which depend upon an accurate knowledge of the habits of the pests to be attacked. Amongst such may be mentioned the well-known trench system for getting rid of locusts. The successful use of this depends entirely upon our knowledge of the fact that young locusts soon after hatching and before they have acquired wings pack together and march in serried brigades down to the nearest crops. They can at this stage be driven into trenches dug for the purpose and exterminated.

A cricket (*Brachytrupes achetinus*) at times does great damage to the roots and stems of young tea, indiarubber, and various other plants in nurseries. It lives in holes in the loose soil of the nursery beds or adjacent areas and in the day time can with profit be dug up and killed off. Internal borers, such as the caterpillar of the sugarcane moth, can be effectively attacked when their action on the cane is understood. The removal and burning of all infected canes as soon as the insect is observed to be at work in them, and whilst they are still young, will do much towards stamping out this pest.

Finally, we come to a remedial measure of quite a different nature to those considered above, and that is the careful study of the various varieties of particular crops and the attacks to which they are subject, with a view to selecting for future use that variety which is the most resistant to such attacks. There can be little question that such in-

vestigations will result in most advantageous results. Of course it may be found that occasionally recommendations will conflict upon this point. For instance, a variety which the Entomologist has proved to be least attacked by insect pests many prove to be seriously infected by fungus ones, but it is not improbable that many of these latter follow, or are the result of insect attacks, the insect committing the first injury to the plant and thus providing a means of ingress for the fungus.

The variety of seed least subject to attack and the variety of plant should, then, be discovered and introduced to the ryot and we shall then have made a great advance in dealing with our numerous insect foes.

### SUMMARY.

In the above paper we have shortly considered the Science of Economic Entomology: its study, aims, and objects. After a few brief words on the importance of the work in such a great agricultural country as India, we proceeded to define the term as the study of the life-histories of injurious insects with a view to instituting remedial measures against them, this latter question involving an acquaintance with the habits of insects, predaceous and parasitic, upon the noxious pests and with the capabilities of various insecticides and other remedial measures. We saw that the aid of the Economic Botanist would be required to identify parasitic insect fungi and to prepare cultures of such for use against crop pests. The difference between the sciences of Botany and Entomology was glanced at and the impossibility of a man being an Economic expert in both in a country the size of India pointed out and reasons for this statement given. Attention was also drawn to the difference in the work of the Museum and Economic or field Entomologist. How the former was concerned with the classificatory portion of the work and with the care of the valuable State type collections, whereas the latter confined himself to the study of the life-histories and habits of insects in the field with the object of working out remedies against them.

After mentioning the position of the *Insecta* in the Animal Kingdom and describing shortly the various stages in the life of an insect, we saw that the mouth parts of insects vary, some having a biting mouth, others a sucking one, whilst others again have a combination of the two; and that the presence of a particular form of mouth might decide the nature of the insecticide to be used against them.

It was then shown that the first step in the work was the study of the life-history, it being a cardinal point that the more one knows about such the greater will be the chance of devising some remedy against the pest. Many insects, we saw, can only be attacked in their active feeding

stage, others in the egg or in the quiescent over-wintering stage. It therefore becomes necessary to be able to recognise our pest in all its stages of life. The matter becomes complicated, since when this has been accomplished it may be found that there are several life-cycles in the year and that the stages in one or more of them may differ from the earlier or later ones. These variations reach their maximum in tropical countries, where the number of life-cycles passed through in the year may be as many as seven. Further complications arise owing to what is known as alternation of generations, an insect living in one form, say, on the stem or leaves of a plant at one period of its life and in quite a different form on the roots at a later stage and season. We also saw that parthenogenesis occurred when large numbers of females are born alive by a female and in turn produce young ones, this state of affairs occurring through the spring and summer months, a true sexual generation only appearing in the autumn, this latter generation differing in appearance from the parthenogenetic females. This state of things compelled the conclusion that we cannot rely upon the fact that life-histories and remedies worked out and applicable in Europe or America will be of use to us or equally justified in India. To do so will be to court disaster. The life-histories of even cosmopolitan insects will vary in India and will be different in different parts of the Continent. In introducing remedies the susceptibilities of the Indian ryots must be taken into account and care be exercised to introduce only such as will be possible to them and at the same time within their means.

We then considered the question of remedies and as to why their study and introduction was necessary. It was pointed out that the large increase of areas under cultivation and their greater increase which the future held promise of, owing to the great irrigation projects now under consideration, made the study of Economic Entomology an imperative matter, it being an axiom that an increase in the area under any one food plant meant an increase in the insect pests partial to it, since there was so much food of easy access to them.

In considering the subject of remedial measures we showed that they divided themselves into two heads: (1) Those applicable through the agency of man; and (2) natural checks brought into play by Nature herself. In the first group we touched briefly upon the question of using spraying mixtures and the reason why some such, as, *e.g.*, kerosine emulsion, were only applicable to insects with sucking mouths, since they were required to clog up the breathing apparatus; whilst others were designed for use against biting insects, since they were of a poisonous nature and were sprayed upon plants in order that they should be taken internally with the parts of the plant consumed by the pest.

We then turned to consider the second group—Nature's remedial measures on natural checks. Such followed Nature's laws, but can, when thoroughly understood, be pressed into the service of man. We stated that it is probable that most insects are subject to such checks, which are of two kinds—the parasitic or internal feeding group and the predaceous or external feeding group. It was shown that little was known of the first lot, which comprised the Ichneumon, Chalcid, and Tachnid flies. The second group are better known in some parts of the world, though this is not the case in India. Cultivators often send them as pests to their crops, overlooking the real one upon which the predaceous insect is actively feeding. It was pointed out that such should be studied and protected so as to make use of them by introducing them into parts of the country where they do not at present exist, but where they are likely to prove beneficial to combat pests. Instances of a tiger beetle and lady-bird beetle useful in this way were quoted. Stress was laid upon the point, however, that these checks should only be used by specialists after they have well studied them in the field. If used by the ignorant they are likely to do more harm than good and bring ridicule upon the question of the effective use of such.

Finally, the question of the remedies applicable through the direct agency of man was more fully considered. Although little is known upon the subject, and it was useless introducing to the uneducated ryot the up-to-date American apparatus, it was too early to say that spraying mixtures could not be effectively used under certain conditions in India, but their exhaustive trial by the expert was first necessary before they were recommended to the ryot. The life history of the Rice Hispa was instanced as a case in point, when by spraying the nurseries before the seedlings were put out into the fields much might be done to check the spread of the pest. But that the trial of such remedies must only be carried out by responsible persons who thoroughly understood what had to be done or they would be brought into disrepute. The question of fungus remedies is still in its infancy, but the experiments with locust fungus are not considered sufficient to warrant its condemnation in India and it would be advisable to further experiment with it.

Other remedial measures were of a different nature and depended upon an accurate knowledge of the habits of the insects. Of such, to quote a few instances, were the trench system for killing young locusts, searching out the holes of cricket pests and digging up and killing them, and the search for sugarcane stems infected by internal borers and cutting them out and burning them.

Lastly, we pointed out that the most satisfactory of all remedial measures would be effected by the study of the varieties of plants which

best resisted attacks and introducing them to the cultivator. That this system should be followed both in the case of seeds and plants and that great results might be expected from work of this nature.

4. *An ancient Assamese Fortification and the legends relating thereto.*  
—By WALTER N. EDWARDS and H. H. MANN.

(Abstract.)

The paper describes the occurrence on the banks of the Burai River, a tributary of the Brahmaputra from the North, in Assam, of an ancient Assamese fortification consisting of two walls, the longer one about three hundred yards long, and ten feet thick, built of faced stone, and facing the plains. These occur in dense cane jungle, just beyond British territory, in the Daphla country in the Himalayas. The Assamese origin of the fortifications is indicated by the type of brick with which the stones are occasionally mixed.

The local Daphla story attached to the fortification is that an Assamese Raja went into the hills and there defended himself from his own people in the plains, but no time or date is assigned, even vaguely, to it.

The whole consideration of the local traditions lead the authors to connect it with the fate of Arimatta, or Arimuri. (cir. 1250 A.D.) the local story of whose life is given, but about whose ultimate fate the traditions among the natives on the spot differ considerably.

5. *Noviciæ Indicæ*, XX. *Some additional Scrophularinæ.*—By D. PRAIN.

(Abstract.)

The writer, having had to assort the Indian material of *Scrophularinæ* in the Herbarium of the Royal Botanic Garden at Shibpur, finds that, owing to extensions of territory on both the North-Western and the North-Eastern frontiers of the Indian Empire, a number of species have now to be accounted for as Indian that are not dealt with in the *Flora of British India*. Following the practice which he commenced fifteen years ago, when this series of papers was begun, the writer now offers descriptions of the species that are new to India, arranged as nearly as possible after the manner of the *Flora* itself, to which the papers of this series are intended as supplements. These descriptions will necessarily benefit chiefly those members of the Society who may be botanising near the various Indian Frontiers; to render the paper of use to other botanical members as well, new localities are indicated for species that are already dealt with in the *Flora*.

The species here described as new to India are the following:—*Verbascum erianthum* Benth.; *Linaria Griffithii* Benth.; *Linaria odora* Bieb.; *Scrophularia cabulica* Benth.; *Adenosma inopinum* n. sp.; *Adenosma hirsutum* Kurz; *Herpestis chamaedryoides* H. B. & K.; *Torenia Benthamiana* Hance; *Vandellia punctata* n. sp.; *Phtheirospermum tenuisectum* Bur. & Franch.; *Pedicularis diffusa* Prain; *Lathraea purpurea* Cummins.

6. *On the acquisition of alar appendages by the Spruce form of Chermes abietis-piceæ.*—By E. P. STEBBING, I.F.S., F.L.S.

(Abstract.)

In July, 1893, Mr. Smythies, late Conservator of Forests, in the Central Provinces, discovered the winged form of a species of *Chermes* issuing from galls on Spruce (*Picea Morinda*) trees, at Deoban, in the Jaunsar Forests of the N.-W. Himalayas (elevation 9,200 ft.) These insects were identified by Mr. G. B. Buckton, F.R.S., as belonging to the species *Chermes abietis* of Linnæus and Kalténbach.

In the spring and early summer of 1901 and 1902 I had opportunities of studying this *Chermes* and discovered the interesting and important fact that, whereas in the case of the European species, one generation of the insect is spent on the Spruce whilst another is passed upon the larch, in the N.-W. Himalayas the other generation of the parallel series is passed, not upon the larch which is not found in those mountains, but upon the silver fir (*Abies Webbiana*). For this reason, I call the insect provisionally *Chermes abietis-piceæ*.

The note deals shortly with the egg and larval stages, the latter being spent in chambers within the gall.

It then describes fully the way in which the diamond-shaped covers of the chambers, into which the gall is divided, open along their upper edges into a narrow lip-shaped slit by which the larvæ leave the Spruce gall or false cone, for it looks like a young fir cone go through their final moult, and appear with their alar appendages folded up in tight little rolls upon the thorax. These latter almost immediately unroll under the influence of the sun and warm air currents. At this stage, the insect is remarkably brightly coloured. The colours soon darken, however, and about a couple of hours after leaving the chamber in the gall the insect is dull-coloured and inconspicuous.

PROCEEDINGS  
OF THE  
ASIATIC SOCIETY OF BENGAL.  
FOR MAY, 1903.

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The Monthly General Meeting of the Society was held on Wednesday, the 6th May, 1903, at 9-15 P.M.

THE HON'BLE MR. JUSTICE F. E. PARGITER, B.A., I.C.S., Vice-President, in the chair.

The following members were present :—

Mr. S. A. Alim, Mr. J. Bathgate, Mr. I. H. Burkill, Mr. D. Hooper, Mr. C. Little, Mr. H. H. Mann, Major F. P. Maynard, I.M.S., Dr. E. D. Ross, Rai Bahadur Ram Brahma Sanyal, Pandit Yogesha Chandra Sastree, Dr. C. Schulten, Mr. E. P. Stebbing, Pandit Satis Chandra Vidyabhusana, Mr. E. Vredenburg.

*Visitors* :—Dr. M. M. Masoom, Mr. H. Maxwell-Lefroy, and Mr. D. H. W. Ritchie.

The Minutes of the last meeting were read and confirmed.

Fourteen presentations were announced.

Mr. W. N. Edwards was ballotted for and elected an Ordinary Member.

It was announced that the Revd. H. O. Moore, Lt.-Col. G. F. A. Harris, I.M.S., and Mr. L. W. King had expressed a wish to withdraw from the Society.

The Chairman announced :—

1. That Dr. T. Bloch having returned from tour, had taken charge of the duties of the Philological Secretary from Dr. E. D. Ross.



2. That the Hon'ble Dr. Asutosh Mukhopadhyaya had been appointed to officiate as the Treasurer of the Society during the absence of Mr. C. R. Wilson.

The General Secretary reported the presentation of the following coins :—

From Babu Rampada Chatterjee, Sub-Deputy Collector, Kishengauj, Purnea—1 gold and 7 silver coins.

From the Government of United Provinces of Agra and Oudh—15 silver coins.

From the Bombay Branch, Royal Asiatic Society—2 gold coins.

The following papers were read :—

1. *The origin of the kap section of the Bārendra Class of Brahmans of Bengal.*—By PANDIT YOGEŚA CHANDRA SASTREE.

(Abstract)

In the 12th century A.D. during the reign of Ballala Sena the number of the Brahmans brought to Bengal by Adisura became immensely increased. There were 350 Brahmans in Bārendrabhūmi and 750 in Rārhabhumi. He sent 250 Brahmans from among 350 Bārendra Brahmans to the south-eastern provinces of India and divided the remaining 100 into three sections, namely : (1) Kulins, (2) Āuddhaçrotriyas, and (3) Kastaçrotriyas. Maitra, Bhīma, Rudra, Sanyaminee, Lahiree, Bhāduree, Sadhu, and Bhādara, these 8 houses were the Kulins and Karanja, Nandanabasi, Bhattasali, Lauree, Champati, Jhampati, Atirtha and Kamadeva, these 8 houses were the Āuddha Çrotriyas. Udayanacharya, the author of Kusumanjali, was born in the house of Bhāduree and Kulluka Bhaṭṭa, the author of Manvartha Muktavali, was born in the house of Nandanabasi. Besides the above 16 houses of Kulins and Suddha Srotriyas, there were 84 houses of Kasta Çrotriyas.

The *kap* section was originated from the Kulin under the following circumstances : one Nrisinha Laurial of Santipore, having been insulted in a dinner given by Sukadevacharya, of the village Brahmanbala, determined to raise his social position. In order to fulfil his object Nrisinha persuaded Madhu Maitra of Majgram, the most respectable Kulin among the Kulins of the then existing society, to marry his daughter. On account of this marriage Madhu was excommunicated from the society by the sons of his former wife.

On the annual Ārādha day of Madhu's father he invited Dhain (देह) Bagchi, his brother-in-law, to dine at his house, as he did not expect to get any Brahman of his own village or its vicinity. On that day Dhain Bagchi having been obstructed by a fencing made by Madhu

while entering into his house, exclaimed—"Well Sir,—what a *kap* have you created here?" In reply, Madhu said: "Yes Sir, I have created a *kap* there." Afterwards he heard everything from Madhu and convened a meeting of Kulins and Srotriyas of Majgram and its vicinity to judge the conduct of Madhu's sons. In that meeting Madhu's sons were found guilty of disregarding and illtreating their father.

Thereupon Dhaiin Bagchi declared that the sons of Madhu Maitra, by his first wife, should not be henceforth classed among the Kulins. They should be called *kāp*. Their position in the society would be an intermediate one. He also declared that henceforth, should any Kulin touch their water or come in contact whatsoever with them, he also would be a *kap*. The latter declaration was afterwards modified by Raja Kamsa Narayana Ray, of Tahirpore, who ruled that a Kulin should not lose his Kulinship, unless he married the daughter of a *kap* or allowed his daughter to marry a *kap*. This rule is still in existence.

2. *Note on the information supplied by meteorological observations at Hill stations.*—By C. LITTLE, M.A.

In a paper read by me at the last monthly meeting of this Society I advocated the extension of meteorological observation to heights above the ground level, to which it has hitherto been confined in India. In the subsequent discussion the President asked whether the information recorded at Hill stations could not be used in discussing atmospheric conditions at the same level, but at a distance from the Hills. The answer to such a question could be on general lines only in the absence of direct observation, and so far as I remember the opinion I expressed was, that information collected on the summits of isolated peaks may in some respects be useful, but that in the Himalayas the influence of the ridges and valleys must deprive meteorological observations of much of their value except for discussions of local interest.

Since the meeting I have met with an instance in which the information collected at Hill stations not only does not appear to represent atmospheric conditions, but may even be misleading to those who may rely upon Hill stations in general discussions. As it appears to me to be important that there should be no misunderstanding in this matter, I have thought it advisable to offer this note to the Society with reference to the President's question, although it contains no information new to meteorologists.

In a paper in the December number of the *U.S. Monthly Weather Review*, on the semi-diurnal periods in the earth's atmosphere, Professor Frank H. Bigelow points out that the semi-diurnal period extends to a short distance only from the earth's surface as shown by the various

direct observations recorded from time to time in Europe and America. He says: "In past years, before it was recognised that the single period prevails throughout the atmosphere, except in its lowest layers, efforts were made to account for the surface double period in two ways (1) by referring it to a dynamic forced wave involving the entire atmosphere as was done by Lord Kelvin, and (2) by seeking to explore the possible connections between the observed waves and the manometric waves due to temperature effects in the lower strata." He goes on to point out how neither of these theories is satisfactory, and states "Like so many other scientific problems which are difficult of solution the trouble apparently lies in the fact that the necessary observations have not been made in the right place. It was supposed that the variations noted at the ground were common to the adjacent strata up to considerable heights, but since meteorologists have succeeded in getting some upper air observations this supposition turns out to be contrary to the fact."

I give herewith tracings showing the diurnal variation of pressure at Calcutta, Lahore, Simla, Trivandrum, and Angustia, also the variation of pressure between Lahore and Simla, from which it will be seen that the diurnal variation is much the same at Hill stations as in the plains, whereas observations in Europe and America would lead one to expect that at 7,000 feet above the plains the variation would be of quite a different form as given by Professor Bigelow. A copy of the curve given in the *Monthly Weather Review* is attached for comparison.

3. *Insecta Indica*, I. Coleoptera, 1. *Notes on the Bostrichidæ of the Indian Region, Part I.*—By E. P. STEBBING, I.F.S.

(Abstract.)

With the exception of the *Lepidoptera* and *Rhynchota*, a portion of the *Hymenoptera*, a family (the *Mantodea*) of the *Orthoptera*, and another (*Cerembycidæ*) of the *Coleoptera*, but little work has up to the present been undertaken in the direction of cataloguing or monographing the rest of the known *Insecta* of the Indian Region. It is, therefore, extremely difficult for workers in the country to find out what is known about a family they may be interested in, and equally so to discover (without going to the collections themselves which is generally impossible) to what extent that family is represented by specimens in the Indian Museum at Calcutta.

The work already accomplished on these lines is easily summarised. It consists of:—

(1) A series of papers on the *Rhynchota* of the Indian Region by the late Mr. E. T. Atkinson, I.C.S. Read before the Asiatic Society and

afterwards published in Vols. LIII to LVII (1884 to 1888) of Part II of the Journal. Species represented in the Indian Museum collections are noted.

(2) A Catalogue of the Moths of India by E. C. Cotes and Colonel Swinhoe. Commenced in 1887, completed in 1889.

Species represented in the Indian Museum collections are noted.

(3) Catalogue of the Mantodea by Mr. J. Wood-Mason, Superintendent, Indian Museum. Two parts 1889 and 1891.

(4) Butterflies of India by L. de Nicéville, 3 Vols., 1883 to 1890. A fourth Volume is complete in manuscript. No notes have been made as to whether the species enumerated are represented in the Indian Museum collections: but as the Trustees of the Museum purchased the whole of Mr. de Nicéville's valuable collection, it is probable that most of the species referred to are in the Museum collections.

(5) The Moths of British India in the Fauna Series by Sir G. Hampson, Bart., Vols. I-IV, 1892-1896.

(6) The Hymenoptera of British India in the Fauna Series by Colonel C. Bingham, Vol. I, Bees, Wasps (1897). Vol. II, Ants and Cuckoo-Wasps (1903).

(7) The Rhynchota (Heteroptera) of British India in the Fauna Series by Mr. W. L. Distant, 1 Vol. only published as yet (1902).

The second volume of Distant's *Rhynchota* and Gahan's volume on the Longicorn *Coleoptera* will be issued shortly.

No mention is made in the volumes of the Fauna Series as to whether the species described are present in the Indian Museum collections or not.

In addition to the above papers, new species are of almost monthly appearance in one or other of the numerous scientific serials and magazines which record such. These will not be listed here, as few will be obtainable by the ordinary student in the country. I may mention, however, the constant appearance of important papers in Indian Museum Notes which may be said to hold the position of being the central and chief entomological publishing centre for the Indian Region; the continuation of the Moth's of the Fauna Series in the Journal of the Bombay Natural History Society, which has also had some papers on Indian Hymenoptera and Butterflies, and the excellent papers on the Coccidæ of the Indian Region by Mr. Ernest Green in Indian Museum Notes.

It will, however, be evident that a vast amount of work still remains to be undertaken. In these papers an attempt will be made to add something to what has already been so successfully commenced. It is not proposed to limit their scope to any one Order, although the *Coleoptera* will receive considerable attention. In the case of every species

mentioned, a reference will be made as to the whether it is represented or otherwise in the Indian Museum Collections. If it is not, every effort will be made to procure specimens of it for these collections. New species in the Author's possession will, when possible, be described; and short references will be given as to distribution, habits, etc., of the insects noticed.

#### Coleoptera 1.

##### Notes on *Bostrichidae* of the Indian Region. Part I.

Until comparatively recently little was known about the *Bostrichidae*, which had been little studied. Mr. P. Lesne, of the Paris Museum, has remedied this state of affairs, and in a classical Monograph (still unfinished) has revised the whole of the group. In these papers, which are confined to the mention of species inhabiting the Indian Region, I have made use of this revision, adding where possible any fresh information upon the life-histories, distribution, etc., that research and my own personal observations, have brought to light.

The family may be considered of some economic importance, since the well-known bamboo borers which are widely distributed throughout the Indian Region belong to it.

Of the four tribes into which Mr. Lesne divides the family, but two, the *Dinoderinæ* and *Bostrichidae*, have representatives in India.

The *Dinoderinæ* are considered in this paper.

It includes four genera, of which two *Dinoderus* and *Rhizopertha* have representatives in the Indian Region.

*Dinoderus* is represented by five Indian species: *D. distinctus*, *D. pilifrons*, *D. punctatissimus*, *D. minutus* and *D. brevis*.

*Rhizopertha* is represented by one species, *Rhizopertha dominica*.

These six species are shortly treated of in the present paper.

[Note.—On reconsidering the question the Author has determined to publish the series of papers entitled *Insecta Indica* in Indian Museum Notes. This paper will therefore appear *in extenso* in that publication.]

4. *Silajatu: an ancient Eastern Medicine*.—By DAVID HOOPER, F.C.S.

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PROCEEDINGS  
OF THE  
ASIATIC SOCIETY OF BENGAL.  
FOR JUNE, 1903.

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The Monthly General Meeting of the Society was held on Wednesday, the 3rd June, 1903, at 9-15 P.M.

The HON. MR. JUSTICE F. E. PARGITER, B.A., I.C.S., Vice-President, in the chair.

The following members were present:—

Mr. J. Bathgate, Dr. T. Bloch, Mr. I. H. Burkill, Mr. D. Hooper, Mr. J. Macfarlane, Mr. C. Michie, Mr. L. Morshead, Dr. C. Schulten, Mr. E. P. Stebbing, Pandit Satis Chandra Vidyabhusana, Mr. E. Vredenburg.

*Visitors*:—Dr. Mirza Muhammad Masoom, The Hon. Mr. Justice Rampini, Mr. H. Sudlow.

The minutes of the last meeting were read and confirmed.

Fourteen presentations were announced.

Mr. Hari Nath De was ballotted for and elected an Ordinary Member.

Mr. Burkill exhibited some irregular casings or tests of a faggot worm from Miraj, near Kolhapur. Faggot worms are the caterpillars of Psychid moths, which protect their soft bodies by making over them casings—faggot-like—of bits of thin twigs glued to the outside of a silken bag. Usually just so many bits of twig are used as are required to cover the circumference.

The casings shown were made of the white thorns of the Babul (*Acacia arabica*; L.); and in a few of them extra thorns had been cut and attached outside the regular casing by the blunt ends in such a way as to stand out at angles varying up to 45°. The casing, so made more spiny, may be more forbidding to a hungry bird, but must be particularly inconvenient to the worm which carries it through the forks of the small branches in search of food.

Where the extra spines had been added, it seemed to have been done in an attempt to lengthen the casing. Two worms had only added one extra spine each, but one worm had added eleven outside the fifteen which made its proper casing.

The Natural History Secretary, Mr. Stebbing, exhibited some Jute rope attacked by beetles and grubs, the external surface of the strands of the rope being pitted with shot holes. The insects performing this work are species of *Sitodrepa*, being closely allied to the well-known book-worm pest, *Sitodrepa panicea*, L., which bores little shot holes into books in our libraries, usually, guided by some unerring instinct, selecting the most valuable ones. The beetles exhibited are tiny, elongated, almost torpedo-shaped insects, yellowish brown in colour, the largest being just under  $\frac{1}{8}$ th inch in total length, whilst the smaller is about half the size. The whole life cycle of the pest is spent within the jute rope, the beetles probably only leaving it during the pairing period. The beetle bores into the rope from the outside, making a horizontal tunnel until it reaches the centre, on reaching which it turns and bores parallel to the longitudinal axis. In the borings it lays its eggs; from these, little white grubs hatch out, which feed upon the internal rope fibre, reducing it to powder and consequently undermine its strength. Badly infested rope can be snapped across at the attacked spots, when the interior will be found full of grubs, pupæ, perhaps beetles, and brownish powder. The insect runs through, in all probability, a number of generations in the year, a life cycle in the hot weather or rains being probably passed through in three months, *i.e.*, the beetle lays eggs, the eggs hatch into grubs, the latter become full fed and change to pupæ and the latter giving rise to mature beetles within this period. This insect belongs to the same family (Ptinidæ), though to a different genus, as the well-known so-called cheroot 'weevil,' *Lasioderma testaceum*. The jute rope exhibited had a diameter of  $\frac{1}{4}$  inch. It is probable that thicker ones are also attacked. Washing the strands over with turpentine would doubtless act as a preventative to attack, whilst at the same time destroying the insects at work inside.

Mr. Stebbing also exhibited some live caterpillars, probably belong-

ing to the family *Tineidæ*, but perhaps very closely related to one or two of the genera of the family *Psychidæ*, specimens of whose larval cases were exhibited by Mr. Burkill: the classification of some of these genera being still open to much revision. The insects in question were extremely curious. They had been found attacking the hair of a mounted *Ovis hodgsoni* head. The long greyish hair had been almost entirely destroyed by these small caterpillars. The caterpillars are little canary-yellow insects with bright brown heads. They live inside a little flat elongated case, made apparently from the hairs, which are spun into a close parchment-like material. The case is left open at both ends, and the caterpillars make use of this peculiarity, appearing now at one end and now at the other, the diameter being sufficiently wide at the middle of the case to enable the larva to turn round inside by doubling up upon itself. When it wishes to do this it attaches the end of the case by a silken strand to the surface upon which it is crawling, backs down the case, turns round inside and appears at the other end, the mouth at the end of the case it has left closing automatically, whilst that at the other end opens. Mr. Stebbing mentioned that the specimens had been only brought to him that morning by the Head Taxidermist of the Indian Museum, and so he had not yet been able to observe the further stages of its life-history. From the above few remarks they are likely to prove of great interest. The hair of the head attacked was ruined.

The following papers were read:—

1. *A note on the Moran language of Upper Assam.*—By MAJOR P. R. T. GURDON, I.A.

(Abstract.)

This paper gives a vocabulary of the language of the Morans, a tribe of Upper Assam, together with the corresponding words in the Kachari, Dimāsā (or Hill Kachari) languages, and Hodgson's Bodo, which probably is Mech. The comparison proves a strong linguistic affinity between them, and the same probably exists between Deori, Chutiya and the Garo language also, both of which belong to the Bodo group.

2. *Materials for a Flora of the Malay Peninsula, No. 14.*—By SIR GEORGE KING, K.C.I.E., F.R.S., and J. SYKES GAMBLE, C.I.E., F.R.S.

(Abstract.)

The paper now presented to the Society is the joint work of Mr. J. S. Gamble, F.R.S., C.I.E., late of the Indian Forest Department, and of Sir George King, F.R.S., late Superintendent of the Royal Botanic Garden, Calcutta. It contains an account of the Natural Order *Capri-*



*foliaceæ*, which is entirely the work of Mr. Gamble. The larger part of it is, however, occupied by an account of those genera of the large Order *Rubiaceæ* which have more than one ovule in each cell of the ovary. The text of the paper devoted to this order is preceded by a key to these genera, of which there are thirty—none of them being new. The species of *Rubiaceæ* described number 164, and of these 50 are new. In a second paper on *Rubiaceæ* an account will be given of the genera which are characterised by having only a single ovule in each cell of the ovary, and that paper will be accompanied by a key to these uni-ovular genera.

3. *Note on the Faqirs of Baliya-Dighi in Dinajpur.*—By MAULAVI ABDUL WALLI.

(Abstract.)

This order of Faqirs belongs to the followers of Shah Madar. They reside at Mauza Baliya-Dighi, within the Hemtabad police station in the district of Dinajpur. Their beliefs and practices are in many ways Anti-Islamic. They grow long hair on their head, put on coloured cloths, and use shackles of iron and long iron tongs. They never take food touched by other persons, and subsist mainly on unboiled rice, clarified butter and salt. They do not eat fish or meat. It would seem that they are a survival of a corrupt form of Sufism mixed with Hindu ideas. They possess a *Sanad* granted by Shah Shuja to Shah Sultan Hasan Muria Burahna, of which a copy is published in this paper, and which gives curious details of the former powers and privileges of these Faqirs.

4. *On some Archæological remains in the District of Rajshahi.*—By MAULAVI ABDUL WALLI.

(Abstract.)

This is a note on two ancient mosques, one at Bagha and the other at Kusumba, in the District of Rajshahi. It contains a copy of an official report on them, written by Mr. J. S. Carstairs in 1872, and some more details of the traditions attached to each mosque. From inscriptions, which still exist at both places, it appears that the Bagha Mosque was built in 930 A.H. = 1523-4 A.D. by Nuṣrat Shāh, the son of Ḥusain Shāh, while the Kusumba Mosque was built during the reign of Ghiyāṣuddin Bahādur Shāh, the son of Muḥammad Ghāzi, of the Sūri family, in the Hijri year 966, which corresponds to 1558-9 A.D. Although there is a large endowment connected with the Bagha Mosque, it has been allowed to fall into a bad state of repair.

5. *Note on the discovery of Thanasimus sp. prox. nigricollis* Lew. in the N.-W. Himalayas, with some remarks on its life-history.—By E. P. STEBBING.

(Abstract.)

In June 1902, whilst touring in the Tehri Garhwal forests in the N.-W. Himalayas, the writer discovered and took a number of specimens of both larvæ and adults of a species of *Thanasimus* prox. *nigricollis* Lew. a beetle of the family *Cleridæ*. After remarking upon the close affinities some of the insects found in the N.-W. Himalayas appear to have with those of parts of Japan, the author goes on to show the importance of the discovery of the *Thanasimus* in the valuable coniferous forests in which it was found. It was pointed out that the insect is an eminently predaceous one, and feeds upon both bark and wood-boring *Scolytidæ*, amongst the species fed upon being some serious conifer pests. It thus takes the place in North India of the European *T. formicarius* which has the same habits in Continental forests, and thus forms one of the most valuable of the insect allies of the forester in those parts. So great is the importance attached to this latter insect in fact that, during some severe bark-boring attacks experienced in America in the pine forests of West Virginia, Virginia and Maryville, between 1890-1892, a well known America entomologist, Dr. Hopkins, was deputed to Europe to make a collection of living larvæ and adults of the predaceous clerid for importation into America. This experiment was conducted to a satisfactory issue.

Our Indian *Thanasimus* has pink elongated larvæ which feed upon the larvæ of the Scolyted beetle upon which it itself as an adult lives, and it is thus of great service during both the grub and adult stages of its existence. The pink grubs seek out the bark-boring grubs in the galleries in the bark of the tree. The clerid beetles, on the other hand, spend the whole of their life outside the tree, and seize the bark beetles upon the bark of the trees either whilst engaged in boring into or issuing from the tree.

The *Thanasimus* adult is probably to be found during most of the months between April and October. The writer by experiment has proved it to feed upon 10 different species of Scolytid beetles.

As the Indian *Thanasimus* is much larger than its European confrère, being almost double the size, it is probably of even greater value in the forest, since it consumes a greater number of beetles during its existence. The beetles is polygamous.

As an instance of the immense amount of good such an insect can do in the forest the following illustration of the immense powers of rapid reproduction possessed by *Scolytidæ* is quoted.

A calculation was made that from eggs laid by the two species *Scolytus major* and *minor*, Steb. MS., in a deodar tree 100 ft. in height to the spot where the crown commenced and 3 ft. in diameter at the base, some 56,300 adults issued in July from eggs laid in April-May, due allowance being made for a large mortality. These 56,300 beetles at once laid the eggs of the second generation in other trees, and taking but 50 per cent. of the resulting larvæ as arriving at maturity, the enormous total of 1,550,000 adults is arrived at, all the result of the April eggs. This shows the rapid rate at which these beetles increase under favourable conditions.

6. *Note about certain sections of the Kakars living in the Zhob District of Baluchistan. Collected by RAI SAHIB DIWAN JAMIAT RAI, Special Assistant to the Superintendent, Imperial Gazetteer, Baluchistan. Communicated by the Anthropological Secretary.*

(Abstract.)

The Kakars are an Afghan tribe in Baluchistan. They amount to over one hundred thousand persons, and are to be found in the largest numbers in Zhob, Quetta-Pishin, and Thal-Chotiali. The paper describes some social customs prevailing among the Mehtarzai and Sargara sections of this tribe, especially ceremonies at child-birth, betrothal and marriage, rain-compelling charms, and other usages. It also gives a legendary account of the origin of the Sanzar Khel section of the Kakars, and a description of some of the primitive Kakar dwellings in Tang Haidarzai.

7. *Exorcism of Wild Animals in the Sunderbans.—By D. SUNDER, Commissioner in the Sunderbans. Communicated by the Anthropological Secretary.*

(Abstract.)

This is an interesting account on the charms used by the fakirs in the Sunderbans to chase away tigers. Between the months of October and May crowds of wood-cutters come in boats from Barisal, Khulna, Faridpur, Calcutta, for the purpose of cutting timber. Their belief in the power of the fakir to protect them against the attacks of wild animals; especially tigers, is so strong that nothing will induce them to proceed to the jungles without their fakir, and no work is begun in the forests by wood-cutters until the fakir has gone through his charms and incantations, and has performed his pujas for the dispersion of all noxious animals. These are described with great detail. The prayers are directed to a curious mixture of gods and godlings. We find there Jagabandhu, Mahadev, Monsha (the goddess of Serpents), Rupapori (a

spirit of the jungles), Kali-Mai, Ospori (a jungle spirit having wings), Berra Thakurain (the wife of Dakho Raja, the father of Durga), Rakhya Chand (another form of Kali), Ghazi Saheb and his brother Kalu, Chawal Pir, Ram Ghazi and Bāstu Devatā (the goddess of the earth). Further, we have Hingli, Bingli, and Mangala, said to be deities of the jungles and the fathers of tigers, also Azrael the rider, alleged to be a spirit who is always on the backs of tigers. If it happens that the fakir himself, instead of the wood-cutters, is carried off by the tiger, the people often explain this by saying that, because the propitiation of the deities of the jungle in those places had been neglected for a long time, the tigers there consequently had become very angry.

8. *The occurrence of Melanterite (Ferrous Sulphate) in Baluchistan.*—By DAVID HOOPER, F.C.S.

9. *Notes on Chirand in the Saran District.*—By NUNDO LALL DEY.  
(Abstract.)

Chirand is six miles to the East of Chupra. It contains an ancient fort, upon which four Hindu temples have been built. There also stands a mosque, built by Husain Shah of Bengal in 1503 A. D. Numerous Buddhist images had been found there, and ancient mounds are seen at several places close to it. The author explains the word 'Chirand' as a compound of *chir*, meaning 'a portion cut off' and *ānd*, which he takes as a corruption of *Ānanda*. There is a tradition that the remains of *Ānanda*, the famous disciple of Buddha, were divided into two parts after cremation, and that one half was deposited in the Mahāvana-Kūṭāgāra, in one of the suburbs of Vaisāli. The latter place was shown to the Chinese pilgrims. There is, further, a legend still current at Chirand that it was the capital of king Mayūradhvaja, who sawed down his son in order to satisfy the craving for human flesh of Siva, who came to the king in the disguise of an old Brahman to test his generosity. Combining all these facts, the author suggests an old mound close to Chirand as the probable site of the tower, containing half of *Ānanda's* remains, and he sides with Dr. Hoey as regards the position Vaisāli who has recently located it at Chirand, in contradiction to Basar, in the Muzaffarpur District, which used to be the generally accepted site of Vaisāli. However this may be, it appears that the ruins at Chirand deserve a careful exploration, as they are promising of important results.

10. *The Mughs of the Sundarbans, Backergunge District.*—By D. SUNDER, Commissioner in the Sunderbans. Communicated by the Anthropological Secretary.

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PROCEEDINGS  
OF THE  
ASIATIC SOCIETY OF BENGAL.  
FOR JULY, 1903.

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The Monthly General Meeting of the Society was held on Wednesday, the 1st July, 1903, at 9-15 P. M.

The Hon. Mr. Justice F. E. Pargiter, B.A., I.C.S., Vice-President, in the chair.

The following members were present :—

Mr. J. Bathgate, Dr. T. Bloch, Mr. I. H. Burkill, The Rev. E. Francotte, S.J., Mr. T. H. Holland, Mr. H. E. Kempthorne, Mr. W. A. Lee, Mr. C. Little, Major F. P. Maynard, I.M.S., Mr. J. Nicoll, Mahamahapadhyaya Haraprasad Shastri, Mr. E. P. Stebbing, Pandit Satis Chandra Vidyabhusan, Mr. E. Vredenburg, and Mr. D. R. Wallace.

*Visitors* :—The Hon. Mr. Justice Rampini, Mr. R. R. Simpson, and Mr. G. Wallace.

The minutes of the last meeting were read and confirmed.

Twenty-nine presentations were announced.

Maharaja Jagadindra Nath Roy Bahadur and Mr. H. Maxwell Lefroy were ballotted for and elected Ordinary Members.

The Chairman announced that the Elliott Prize for Scientific Research for the year 1902 had not been awarded, as the essay received in competition was not of sufficient merit to justify the award of the Prize.

The Chairman also announced that Mr. T. H. Holland had been elected a member of the Council of the Society.

The General Secretary reported that the Hon. Mr. Justice F. E. Pargiter had been appointed to serve on the Finance and Philological Committees, and Dr. E. D. Ross on the Library Committee of the Society during the present year.

The Natural History Secretary exhibited pupæ and moths, together with drawings of all the stages in the life-history of the Tineid larvæ shown at the last meeting feeding upon hair taken from a badly attacked mounted head of an *Ovis hodgsoni*. The first of these larvæ changed to pupæ on the 6th June, and others followed suit on the following days, until by the 25th all had pupated. In doing this, they attach themselves either amongst the hairs by means of thin silken strands, or more often collect gregariously together in bunches. The covers of the box in which they were kept were all made in this way, the larvæ congregating together and spinning their cases together. They pupate within the case. Pupation lasts but a few days only, the first moths issuing on 11th June, whilst others followed on 14th and subsequent days, and are still emerging. The pupæ moves itself to the mouth of the case, when the moth is ready to emerge, and protrudes beyond it to facilitate the exit of the moth. Thus, when the latter has escaped, the empty pupal case remains projecting from the mouth. The pupa is brown in colour and very small. Length 6 millim. The figure shows the larval cases collected gregariously together, and an empty pupal case projecting from the mouth of the larval case.

The moth is a tiny grey insect with very long fringes to its wings, which are longish and narrow and covered with long scales especially near the inner angles of the lower wings. Wing Exp.—13·2 millim.

Mr. Stebbing also exhibited a small species of *Thanasimus prox. formicarius*, which is predaceous upon the larvæ of the Bamboo shot-borer *Bostrichus pilifrons*, an insect known as 'ghoong' in many parts of India. The larvæ are long and white in colour, and also feed upon the Bostrichid larvæ in their galleries in the bamboos. When full-fed they pupate in the bamboo, and the beetles live inside it and feed upon the shot-borer's larvæ. They probably only leave the galleries to pair. They are very active and excessively voracious.

This beetle will be described in a subsequent paper.

The exhibit shows the larvæ, pupæ and adults of the *Thanasimus*, as also the larvæ, pupæ and adults of the *Bostrichus pilifrons*.

The following papers were read :—

1. *Notes on Sundribun Plants.*—By D. PRAIN.

The writer has recently published a paper (*Records, Bot. Survey of India*, vol. ii. n. 4) dealing with the *Flora of the Sundribuns*. He had occasion there to call attention to the fact that a number of species have been recorded from this region in Roxburgh's *Hortus Bengalensis*, published in 1814, and that a few of the species there mentioned have not been collected in the area since Roxburgh's time. The specimens themselves that would have verified Roxburgh's statements were removed from Calcutta in 1828 and are now entirely lost to India. Those, however, who have to follow Roxburgh's published work are so struck by the closeness and accuracy of his observations that, when he makes a definite statement, they accept its correctness in the face of any amount of negative evidence.

The species that are recorded from the Sundribuns by Roxburgh, for which the record had been unverified by subsequently collected specimens when the writer's paper went to press hardly a year ago, were *Flemingia congesta*, *Mezoneuron cucullatum*, *Bruguiera parviflora*, *Arthrocnemum indicum*, *Salicornia brachiata*, *Dendrobium Pierardi* and *Pteris vittata*. Since the paper was sent to the printer, a native collector, who had been sent to obtain seeds of various Sundribun species, has brought in specimens of *Salicornia brachiata*, which he found in abundance not far from Matla (Canning Town). And immediately after the publication of the paper the writer received from a careful observer, Mr. J. Lancaster, Secretary to the Agricultural and Horticultural Society of India, an interesting note regarding *Dendrobium Pierardi*, which is worthy of being recorded.

In June 1896, Mr. Lancaster, being unwell, was sent for a fortnight's change of air by Sir C. C. Stevens, then President of the Society, and through the kindness of Capt. Petley was enabled to join the "Tigris" which was proceeding to stock the Refuge-Houses along the seaface of the Sundribuns.

The steamer went direct to the most distant Refuge-House, two days' journey east of the Matla. While running down the lane of water leading to the house the boat took the ground, a not unusual accident at the sharp turn known as the Devil's Elbow.

The delay consequent on this was taken advantage of by Mr. Lancaster to examine through a glass the islands east and west of the position. Detecting to the east, on Bangadhony Island, a tree rather taller than usual with a forked stem and apparently a clump of orchids in the fork, Mr. Lancaster accompanied by Mr. Hogg, late of the Calcutta Police, proceeded to this tree, and climbing its gnarled and twisted trunk,



obtained a clump of a *Dendrobium*. This he mounted on his return to Calcutta, and obtained flowers later on which proved it to be *Dendrobium Pierardi*. The plant is still alive in the Society's garden at Alipur, and though the block on which it was originally placed has decayed, its roots have laid hold of some wire netting and *Vanda teres* stems, and it thrives in quite as exposed a position as that in which it was found.'

Thus, though the writer was unaware of the fact, Roxburgh's record of *Dendrobium Pierardi* from the Sundribuns area, which by the way is the *locus classicus* for the species, had already been amply confirmed, and there is little doubt that similar happy accidents will in time lead to a confirmation of Roxburgh's other and as yet unverified records. The writer would esteem it a favour if members of the Asiatic Society interested in the Sundribuns would communicate with him should they contemplate visiting on official duty, or for purposes of sport, this very enticing region, when he would be glad to indicate to them what, from the botanical standpoint, still calls for observation and investigation.\*

2. *Notes on the Grām Devatā or tutelary village deity of Orissa*.—By JAMINI MOHAN DAS, Deputy Magistrate, Cuttack. (Communicated by the Anthropological Secretary.)

(ABSTRACT.)

Throughout the plains of Orissa, every village has a tutelary goddess, called Grām Devatā or Ṭhākurāṇī. She is generally established under the shade of a tree, and commonly represented by a piece of shapeless stone, surrounded by several smaller pieces representing her children. Carved images are also met with, though very rarely, and sometimes the trunk of a tree, supposed to possess supernatural properties, is worshipped as the village Goddess. The Kandhs of Nāyagarh, however, believe their village deity to be of the male sex, and use a wooden post, 2½ feet high, to represent it. Besides the generic name, Grām Devatā, each Goddess has a specific name, which is generally one of the thousand names of Kālī. The most noticeable feature of the Grām Devatā worship is the non-priestly caste of the men who conduct it. In the plains, the Nāpīt, Māli, Rāul, or Bhopā is usually the priest,

\* Since this paper was read, the Rev. Mr. Le Quesne, of Bhowanipur, has kindly communicated plants of *Randia dumetorum*, raised from seeds collected in an abandoned Sundribun settlement at Gaoroba. The writer has also just learned that in other places which mark the sites of habitations of the old dacoits and salt-smugglers who infested the Sundribuns, are to be found growing examples of *Mimusops Elengi*—the Bakúl tree.

while the aborigines select men from their own tribes. The worship of the village Goddess is largely supported by small rent-free grants of land, which is held by the priest, who gets in addition daily doles from the rich men of the village, and weekly doles from the poorer people. Thursday is considered specially auspicious for the regular *pūjā* of the Goddess. Special offerings are made at all festive occasions, and the *Thākurāṇī* receives particular attention on the out-break of epidemic diseases. The ceremonies performed on these occasions are the same as elsewhere in India. The people have a peculiar means of knowing the wishes and decrees of the Goddess. In almost every village is a male or female medium, called *Kāṣaī*, through whom the Goddess communicates with the people. He appears before the Goddess holding two sticks in his hands, and swings his body to and fro. After a time he begins to tremble, and in the course of his confused mutterings gives out some secrets of the village, to win the confidence of the people. He then predicts evil to some and good to others, prescribing at the same time the remedies required in the shape of special offerings to the Goddess and special favours to himself. Certain village Goddesses in the plains are regarded as "Parama-Vaiṣṇavi," and animal sacrifices are not allowed before them. Such sacrifices are also sparingly made before the other Goddesses, probably owing to the spread of Vaishnavism. Fowls are also let loose before some of the Goddesses by the upper classes of Hindus, who do not eat them, and they are killed by the lower classes who eat them.

Finally, the author points to the practice of animal sacrifices, the offerings of fowls, the relegation of the priestly function to the Sudra castes, and the shapeless form of the images as indicating the aboriginal origin of this form of worship.

3. *A note on the life-history of Ohermes abietis-piceæ, Steb. Ms.*—By E. P. STEBBING.

(ABSTRACT.)

In a previous paper read before this Society at the Meeting held on April 1st last, I gave an account of the mode of development of the alar appendages of the Spruce form of *Ohermes abietis-piceæ*. It is my intention here to describe in detail the observations I have up to the present been able to make on the life-history of this exceedingly remarkable and interesting insect, which lives at elevations of between 7000 to 9500 feet upon Spruce and silver fir trees in the N.-W. Himalayas.

The genus *Ohermes* belongs to the great family *Aphidæ* or Plant Blights, one of the families of the *Rhynchota* or bugs, insects provided with a proboscis or beak by means of which they suck out the juices of plants.

It is not too much to say that man himself would be exterminated off the face of the earth if this particular order of insects were not kept in check by their numerous predaceous and parasitic foes. But the genus is especially remarkable, in common with the well-known *Phylloxera* which commits such serious depredations in European vineyards, owing to the fact that one generation of individuals assume different habits to the one that has preceded them, and so set up the phenomenon known as "parallel series." It is well-known that in the case of the *Phylloxera*, one generation lives in galls upon the leaves, whilst a succeeding one lives underground upon the roots of the vine. There is a European form of the *Chermes* here described, and its life-history has been the subject of the most lively discussion amongst European scientists, the investigations of such renowned observers as Blochmann, Dreyfus and Cholodkovsky standing out the most prominently. Perhaps the latter may be said to have given us the most lucid explanation in his paper published as recently as 1890. This European form, which is named *Chermes abietis-laricis*, lives upon the Spruce and larch. The writer discovered the *Chermes* here dealt with in the N.-W. Himalayas. In this region the larch does not exist, and its place is taken by the Silver fir which is generally to be found associated with the Spruce. The life-history of the insect upon these trees, which appears to differ in a few points from that of its European confrere, may be briefly summarised as follows:—A wingless parthenogenetic female of the *Chermes* either deposits her eggs upon Spruce twigs and branches in the autumn, or hibernates through the winter upon the tree and lays her eggs in the April of the following year. These eggs, which are numerous, hatch out at the beginning of May, and the young larvæ collect round the base of the young developing needles on the branches and by suction cause them to swell up at their bases. The needles thus coalesce, enclosing the young larvæ, into a gall or pseudo-cone. This grows on until it has the appearance of a young, green fir-cone. Inside it becomes partitioned off into a number of cells, in each of which a number of young larvæ live and grow to maturity. In the middle of July they are ready to undergo their last moult. The cone then opens by shrinkage at the edges of the little doors, with one of which each compartment is furnished, and the little fat purple larvæ crawl out on to the outside of the false cone. They at once shed their last skin and become perfect winged insects, most gorgeously coloured, though these colours fade within a few hours. These insects now take on different habits; some of them remain on the Spruce and lay eggs thereon out of which young are hatched, which probably grow into the hibernating females, whose offspring next year produce the galls upon the tree. But another portion migrate to the Silver fir (in

Europe it would be the larch); here they lay eggs from which arise the wingless parthenogenetic females which either lay eggs upon the stems and branches of the new or secondary plant in the autumn or hibernate on it through the winter and lay eggs in April. These eggs are invariably laid within white cottony masses which render their presence upon the trees easily perceivable. These eggs hatch out in the beginning of May, and the young, crimson-coloured larvæ crawl up on to the newly-developed spring needles of the tree and suck out their juices. Part of these become nymphs and go on to the winged condition, and then about the middle of July fly back to the Spruce, whilst the rest remain wingless and lay eggs that give rise to yet another wingless generation; in fact, it may be said that a second pair of parallel series is formed upon the Silver fir, of which one is wingless and exclusively parthenogenetic and continues to live for an indefinite period upon the tree, whilst the other becomes winged and returns to the Spruce. I have not as yet traced the further life-history of these winged individuals beyond ascertaining the fact that they really do return to that tree. It is probable, however, that they at once lay eggs, which give rise to a sexual generation. These latter lay upon the Spruce the egg which gives rise to the wingless parthenogenetic ♀ which starts the life-cycle by laying the eggs from which hatch out the young larvæ whose action produces the galls or pseudo-cones.

It is considered probable that it will be held that the discovery and working out of the life-histories of this insect and that of the *Thanasimus* sp. (the Clerid predaceous upon bark-beetles) whose habits were discussed in a paper read at the last Meeting, are amongst the most important, as they are scientifically as well as economically amongst the most interesting of the entomological investigations made in this country.

4. *Notes on the Hindus in the Nuskhī Tahsil of the Chagai Agency in Baluchistan.*—By H. RAI SAHIB DIWAN JAMIAT RAI, *Special Assistant to the Superintendent, Imperial Gazetteer, Baluchistan.* Communicated by the *Anthropological Secretary.*

(ABSTRACT.)

These notes are the outcome of enquiries made from some of the principal Hindu shop-keepers of Nuskhi. There are in all about thirty families, old inhabitants, some of whom have been in the Tahsil for five generations. They are all Arora Hindus, and the majority of them came from Kachi and Shikarpur. They all know Brahui, and most of the men speak Baluchi also, but in their homes they speak the Jatki dialect. There are also about twenty families in Shorawak, in Afghan territory. They have not very clear ideas about their religion. The

majority profess Sikhism, but the Shikarpuris worship Darya Bakhsh, the River Pir of Sind. So far as is known, none of the Hindus have been converted to Muhammedanism. There is, however, an instance of a Hindu taking a Muhammedan girl as wife. Hindus have been in the habit of buying and keeping Muhammedan slaves. These Hindus have some peculiar usages of their own. Thus a Muhammedan can clean his pots with ashes, sand, or dust, but he must not wash them with water. A Muhammedan may bring them water in a skin, a brass pot, or an earthen pitcher. A Hindu may wash with water the baking-stove belonging to a Muhammedan, sprinkle salt on it, and then bake his bread on it. A Muhammedan must not touch food belonging to a Hindu, but he may carry it in a pot or a piece of cloth. The author then goes into details with regard to the ceremonies at betrothal, marriage, childbirth and death; but these do not appear to differ essentially from the customs prevailing amongst the Hindus in the Panjab.

5. *The exceptional heat in Bengal, and its probable cause.*—By C. LITTLE, M.A.

(ABSTRACT.)

The temperature tables given for Calcutta and other parts of India show that between the middle of April and the 25th of May excessive heat continued without interruption, though not without fluctuation in Bengal; while beyond the western frontier of Bengal there was either normal, or, as in the north-west, exceptionally low temperature. The progressive character of the temperature recorded at Alipore, since the establishment of the observatory there, is referred to; and it is pointed out that  $107^{\circ}.4$  registered during the past season is the highest recorded with one exception, *viz.*,  $108^{\circ}.2$  on the 12th of June, 1901. This latter value is to some extent of doubtful accuracy. It is also shown that the temperature at Calcutta exceeded  $103^{\circ}$  eleven times during April and May 1903, whereas during the previous ten years the average number of days on which that figure was exceeded was less than three. It is claimed that excessive temperature of that nature as regards intensity and duration in Bengal, must, in the absence of relatively high temperatures in the west, be due to well defined causes not indicated by the ground-level observations. Reference is made to the direction of the upper current, and the writer states that his own observations of the course followed by thunderstorms during the past season as well as the cloud movement, whenever cloud was visible, indicate that the air-current overhead was, during the period of heat, from the west instead of from the more usual north-westerly direction. Assuming that a westerly current from Central India is warmer than a north-westerly current

from the directions of the Himalayas and Central Asia, it is shown that the more abnormal features of the weather in Bengal may be explained, the excessive heat by impaired convection, and the failure of thunderstorms by the diminished vertical temperature gradient.

6. *Notes about the Wanechis (Spin Tarin Afghans) of the Shahrig Tahsil, Thal Chotiali, Baluchistan.*—By RAI SAHIB JAMIAT RAI, *Special Assistant to the Superintendent, Imperial Gazetteer, Baluchistan. Communicated by the Anthropological Secretary.*

(ABSTRACT.)

The Wanechis are a section of the Spin Tarin Afghans. These, with a few exceptions, have left their original home in Pishin, and migrated southwards to Shahrig and Duki Tahsils of Thal Chotiali. Numerically their strongest group is the Wanechi, which is said to come of an alien stock. Theoretically an Afghan tribe, as we find it in Baluchistan, is constituted from a number of kindred groups of agnates. That is to say, descent is through the father, and the son inherits the blood of the father. Affiliated with a good many tribes, however, are to be found a certain number of alien groups known as *Mindūn* or *Hamsāyah*. The latter term means: "living in the same shade." These groups are admittedly not united to the tribe by kinship. The number of Wanechis according to the last census is 2,802, and the sections specified are twenty. The paper then goes into further details with regard to the sub-divisions or clans making up the various sections, their origin, their grouping in time of tribal warfare, the division of looted property, transit-dues levied by some tribes, their marriage customs, and compensations paid for various offences, such as murder, injury, theft and adultery.

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*Journal of Management Studies*, 36(7), 809–827.

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

PROCEEDINGS  
OF THE  
ASIATIC SOCIETY OF BENGAL.  
FOR AUGUST, 1903.

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The Monthly General Meeting of the Society was held on Wednesday, the 5th August, 1903, at 9-15 P.M.

THE HON'BLE MR. C. W. BOLTON, C.S.I., I.C.S., President, in the chair.

The following members were present:—

Mr. J. Bathgate, Mr. I. H. Burkill, Dr. A. Caddy, Mr. J. N. Das-Gupta, Dr. W. C. Hossack, Mr. C. Little, Mr. J. Macfarlane, Kumar Ramessur Maliah, The Hon'ble Mr. Justice F. E. Pargiter, Mr. C. G. Rogers, Pandit Yogesā Chandra Sastree, Mahamahopadhyaya Haraprasad Shastri, Mr. E. P. Stebbing, Pandit Satis Chandra Vidyabhusana, Mr. E. Vredenburg, and Mr. E. H. Walsh.

*Visitors*:—Mr. I. A. Black, Mr. R. Enthoven, Mr. L. L. Fermor and Mr. H. G. Pearson.

The minutes of the last meeting were read and confirmed.

Thirty-three presentations were announced.

Mr. Abdur Rahim and Dr. Mirza Muhammad Masoom were ballotted for and elected Ordinary Members.

It was announced that Lt.-Col. C. H. E. Adamson had expressed a wish to withdraw from the Society.

The General Secretary reported the death of Babu Ram Din Singh, an Ordinary Member of the Society.



With reference to a Circular issued by a Committee of the British Association for the purpose of collecting photographs of Anthropological interest, printed in the Proceedings of the Society for April 1903, the President announced that the Council had agreed to the establishment of a local Indian dépôt for the storage of negatives, and the Society had further undertaken to store the negatives.

The President also announced that the Council had approved of the proposal of the Hon'ble Mr. Justice F. E. Pargiter, Vice-President, to use the Society's Meeting Hall for the purpose of arranging a popular lecture on some scientific subject on the 10th August, 1903, at 9-15 P.M. The Council had further undertaken the business of the lecture itself at a charge to cover expenses incurred from the sale proceeds of the tickets, and entrusted the matter to a Sub-Committee consisting of the Vice-President, Mr. E. P. Stebbing, the Hon'ble Dr. Asutosh Mukhopadhyaya, and the General Secretary. Members of the Society will be admitted free and tickets sold to Scientific Institutions at a large reduction.

The General Secretary reported :—

1. That Mr. T. H. Holland had been appointed to serve on the Finance Committee of the Society during the present year.

2. That the order of Council relative to the Library being open to the members of the Society from 10 A.M. to 2 P.M. on Sundays, had been revoked.

3. That the Council had appointed Pandit Mahendra Nath Mukhopadhyaya as the Pandit for the Oriental Library of the Society in the place of Pandit Charu Chandra Bhattacharyya, resigned.

The Natural History Secretary, Mr. Stebbing, exhibited the various stages in the metamorphosis of a species of *Clania prox. crameri* which defoliates *Casuarina* (*Casuarina equisetifolia*) trees in the Madras Presidency, and made a few remarks upon its life-history. The insect, of which specimens of the various stages and diagrams were shown, belongs to the family *Psychidæ*, commonly called the bag-worms because of the habit the larvæ have of preparing for themselves early in life small cases of bits of stick, leaves, etc., in which they live and pupate. In the present instance the case is made of the small green branches of the tree arranged in a cylindrical manner. The green soon fades, and the case then assumes the dirty grey colour of pieces of stick. The caterpillar feeds upon the needle-like leaves of the tree, and its protective case doubtless helps to protect it against birds which, owing to the very thin foliage of the *Casuarina*, would quickly see it feeding upon the tree had it not some form

of protection. The grub takes alarm at the slightest motion and immediately withdraws itself into its case. It is a heavy feeder. It pupates within the case, closing down the bag opening at the exterior end after fixing the case to a branch, and then turning round inside the case so as to hang head downwards. The moth escapes at the lower end of the case. Only the male leaves the case; the female is wingless and consists of an elongated yellow sac with no legs or mouth parts. She is fertilised by the ♂ within the case itself, and this is the reason for the great extension of the abdominal tip in the male moth. The female lays her eggs in the case. About 9 days are spent in the pupal stage by the July generation of the insect.

The eggs laid by the July-August moths hatch out within a few days of being laid, the young larvæ at once leaving the case and scattering over the young branches of the tree. These are those of the second generation of the year.

In the discussion that followed Mr. Rogers said that he had noticed some faggot worms on the Casuarinas in Port Blair (the Andamans), and suggested that they might be the larvæ of the same species as Mr. Stebbing had obtained in Waltair and Ganjam (Madras).

Mr. Rogers then drew attention to the occurrence of young Casuarina trees on the North and West Coast of the Little Andaman and also their occurrence in Car Nicobar (West Coast) and Great Nicobar also on the West Coast, and suggested that as the genus was so far as he knew essentially an Australian one, that the seed might have been water-borne and have come across from Madras. The seed of the Casuarina ripens in Madras in May, and the South-West monsoon commences early in June, which would seem to point the possibility of the introduction of the Casuarina into the Nicobars and Andamans in this way. It is true the Casuarinas have been planted at Port Blair (Andamans) and Nancowry (Central Nicobars) on the hills near the harbour, but few young seedlings have resulted naturally from these trees, the young trees referred to above being confined to the sea-shore.

Dr. A. Caddy stated that he knew Australia and that the genus, with the exception of *Casuarina equisetifolia*, was confined to the Australian Continent, but that the species named had been reported from Madagascar.

Mr. Bathgate then asked how the moth could have got to the Andamans from Madras. Mr. Stebbing pointed out that there was no proof of the identity of the species, as no moths had been reared by Mr. Rogers in the Andamans, and it was therefore impossible to say that the larvæ noticed as occurring in that locality were identical with those collected in the Casuarina plantations of Madras.

The following papers were read :—

1. *Chronology of the Eastern Ganga Kings of Orissa.*—By MONMOHAN CHAKRAVARTI, M.A., B.L., M.R.A.S., *Deputy Magistrate.*

(Abstract.)

The chronology of the Eastern Ganga kings is in a confused state. The object of this article is to clear this confusion as far as possible with the help of inscriptional and other records.

The fourteen Eastern Ganga kings from Cōḍaganga to Nṛsimha Dēva IV have been taken in hand one by one, all the date references noted in a tabular form, the first and last year deduced, the relationship and titles noted, and then all available informations likely to throw light on the chronology have been gathered and discussed. Eighty-one date-extracts of inscriptions have been quoted in the tables, most of them published in full for the first time, besides references to other inscriptions in the accounts given below each table.

The following approximate times of the Orissan Ganga kings have been arrived at :—

Cōḍaganga	...	...	Çaka 998-1069.
Kāmārṇava VII.	...	...	Ç. 1069-1078.
Rāghava	...	...	Ç. 1078-1092.
Rājarāja II.	...	...	Ç. 1092-1112.
Aniyaṅka <i>alias</i> Ananṅa-			
bhīma II.	...	...	Ç. 1112-1120.
Rājarāja III.	...	...	Ç. 1120-1133.
Ananṅabhīma III.	...	...	Ç. 1133-1160.
Nṛsimha Dēva I.	...	...	Ç. 1160-1186.
Bhānu Dēva I.	...	...	Ç. 1186-1200/1.
Nṛsimha Dēva II.	...	...	Ç. 1200/1-1227/3.
Bhānu Dēva II.	...	...	Ç. 1227/3-1249/50.
Nṛsimha Dēva III.	...	...	Ç. 1249/50-1274/5.
Bhānu Dēva III.	...	...	Ç. 1274/5-1300/1.
Nṛsimha Dēva IV.	...	...	Ç. 1300/1-reigning in Ç. 1324 and probably in Ç. 1346.
Dark Period	...	...	Ç. 1346(?)—1356/7.

The article ends with a genealogical table of the entire Ganga family from Virasimha, the reputed founder, to Nṛsimha Dēva IV., with their respective years of reign.

2. *Himalayan Summer Storms and their influence on Monsoon Rain-fall in Northern India.*—By C. LITTLE, M.A.

3. *A List of Tibetan Books brought from Lhasa by the Japanese monk, Mr. Ekai Kawa Gochi.*—By E. H. WALSH, I.C.S.

4. *On the life history of a species of Arbela, new to the Indian Museum Collections, which is proving a destructive pest in Casuarina plantations in Madras.*—By E. P. STEBBING.

(Abstract.)

How little is really known about our insect foes in India is becoming increasingly evident day by day. An insect suddenly swarms over an area in numbers owing to some particularly favourable conditions in its surroundings, it commits serious depredations in the fields, orchards, or forests of the tract it is invading and specimens are sent for identification to specialists. The odds are greatly in favour of its being unknown to science. Instances of this state of affairs are numerous, and it may be said that, leaving out of account the butterflies and one or two other groups which have received attention, it is easier to pick up a new species than to collect one that is known. The moth known as *Arbela tetraonis* Moore, about whose life-history I wish to put on record a few notes, furnishes an illustration of the aptness of the above remarks, since although new to the Indian Museum Collections and rare in collections generally, its larva has been known for some years as a destructive bark eater in *Casuarina* (*Casuarina equisetifolia*) plantations on the eastern seaboard of Madras. There may, however, be said to be some excuse for its having remained so long undescribed, since it belongs to a family of moths closely allied to the *Cossidæ* which have been little studied and the life-histories of whose members are little known, the larvæ often living in the interior of the woody portions of trees. The moths are rarely seen; in colouration they often greatly resemble the surfaces upon which they rest, and being poor fliers they do not move about much and, owing to the method of living of the larvæ, they are difficult to breed out. The pupal stage of the English Goat Moth is known and has been described, but very little is known about the pupæ of other members of the *Cossid* family, and practically nothing is on record about the Indian *Arbelidæ*. The description of the pupal stage of this insect given in the paper is therefore of some interest and importance.

After noting on the members of the families represented in the Indian Museum, including an unnamed specimen, which is labelled 'de Nicéville, Calcutta, 1891,' and which is not unlike the insect here dealt with, the paper gives a description of the larva, pupa, and moth\*; and then alludes to the portions of the life-history at present known and describes the method of feeding of the larva. This is important. The

\* This insect has since been very kindly identified for me by Mr. G. C. Dudgeon as *Arbela tetraonis* Moore. E.P.S., 2nd November, 1903.

caterpillar feeds entirely upon the bark, building for itself covered ways under which it takes shelter. These galleries, which resemble glorified termite galleries, are composed entirely of the excreta bound together with fine silk. These covered ways are very conspicuous upon the bark of the tree, being from  $\frac{1}{8}$ rd to  $\frac{1}{4}$ " in breadth externally, and from 9" to as much as 18" in length, and reddish brown in colour. An infested tree can always be told by the presence of these galleries which doubtless serve to protect the caterpillar from the attacks of birds and other predaceous foes. The bark is eaten away either in thin irregular-shaped patches in the neighbourhood of the galleries or gnawed down to the wood beneath the covered ways. These latter run up or down the tree or may nearly or quite encircle it. When the insect is plentiful the trees are killed out by it. On becoming full fed the larva leaves the bark and bores right into the wood until it reaches the centre of the tree where it pupates. On maturing, the pupa by means of rows of spines with which it is encircled, wriggles and pulls itself along the gallery in the wood until it reaches the outside; it then pushes through the covered way till about  $\frac{1}{3}$ rd of its length protrudes. The anterior end then splits down and the moth escapes. Moths emerge between March and July.

The insect appears to be fairly common in Chatrapur (Ganjam), Godavari, Cuddalore, Nellore (S. Arcot), and in North Arcot. In these places valuable Government Casuarina plantations exist, formed either with the object of stopping the encroachment of the shifting sand dunes on to the cultivated lands, or on to roads, etc., or to provide wood and fuel for the local population for whom little other wood save that of palm trees exists. It will be seen, therefore, that the attacks of an insect of this nature are of importance since they may ruin the result of many years' work. Unfortunately the insect is not alone but has other insect allies which aid it in the work of destruction.

In a discussion which followed Mr. Pargiter, Vice-President, stated that when stationed in the Sunderbuns some years ago he had seen a larva which appeared to live and feed in a very similar manner to the *Arbela* larva described by Mr. Stebbing.

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PROCEEDINGS  
OF THE  
ASIATIC SOCIETY OF BENGAL.  
FOR NOVEMBER, 1903.

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The Monthly General Meeting of the Society was held on Wednesday, the 4th November, 1903, at 9 P.M.

THE HON. MR. JUSTICE F. E. PARGITER, B.A., I.C.S., President, in the chair.

The following members were present:—

Mr. J. Bathgate, Dr. T. Bloch, Mr. I. H. Burkill, Rev. E. Francotte, S.J., Mr. T. H. Holland, Dr. W. C. Hossack, Mr. C. Little, Mr. J. Macfarlane, Dr. M. M. Masoom, Mr. C. W. McMinn, Mr. C. Michie, Mr. L. Morshead, Pandit Yogesa Chandra Sastree, Mr. E. P. Stebbing, Pandit Satis Chandra Vidyabhusana, Mr. E. Vredenburg, Mr. D. R. Wallace, Mr. E. H. Walsh, Major J. H. Tull Walsh, I.M.S., and Dr. C. R. Wilson.

*Visitors* :—Mr. J. A. Black and Mr V. H. Jackson.

The minutes of the last meeting were read and confirmed.

Eighty-one presentations were announced.

Mr. J. Hope Simpson, Nawab M. M. Hosein Khan, The Right Rev. Dr. Reginald Stephen Copleston, Mr. J. C. Faunthorpe, Professor C. Ito, Dr. A. S. Allan, and Mr. T. D. Edelston, were elected Ordinary Members during the recess in accordance with Rule 7.

It was announced that Dr. F. Noetling, Mr. E. S. Wood, and Mr. A. F. M. Abdur Rahman had expressed a wish to withdraw from the Society.

The General Secretary reported the death of Mr. W. B. Colville, an Ordinary Member of the Society.

The President announced :—

1. That the Council had appointed Mr. E. H. Walsh, I.C.S., Anthropological Secretary of the Society in the place of Mr. E. A. Gait, resigned.

2. That during the absence of the Hon. Dr. Asutosh Mukhopadhyaya, Mr. J. Macfarlane had been carrying on the duties of Treasurer, and that Dr. C. R. Wilson, having returned from leave, had taken over charge of the office of Treasurer from Mr. Macfarlane.

3. That Mr. E. P. Stebbing had been appointed to serve on the Library and Library Catalogue Committees, and Mr. I. H. Burkill on the Library Committee of the Society during the present year.

4. That the Council had appointed Pandit Asutosh Tarkatirtha as the Resident Pandit attached to the Search for Sanskrit Manuscripts, in the place of Pandit Hari Kishore Goswami, resigned.

5. That the Council had decided that the Members of the Bombay, Madras, Ceylon, and Singapore Branches of the Royal Asiatic Society, when in Calcutta, should have the right of attending the Society's General Meetings.

6. That the Council had decided that the Secretaries of the various branches should be responsible for recording the discussions on papers, and they should decide whether the discussion, or what part of it, should be printed.

7. That in connection with the Scientific Lectures delivered in the Society's Hall, the Council had resolved that they could not undertake the business any further.

8. That the Council had further resolved that the system of transliteration adopted by the Royal Asiatic Society should be also adopted by the Asiatic Society of Bengal.

The General Secretary reported for confirmation by the General Meeting that the Hon. Mr. Justice F. E. Pargiter, B.A., I.C.S., had been elected President, *vice* the Hon. Mr. C. W. Bolton, C.S.I., I.C.S., resigned.

The General Secretary reported the presentation of 2 gold, 6 silver, and 2 copper coins from the Honorary Secretary, Bombay Branch, Royal Asiatic Society, found in the various districts in the Bombay Presidency.

Mr. E. H. Walsh exhibited a collection of stone implements found in the Darjeeling district.

The Natural History Secretary, Mr. Stebbing, exhibited specimens of the ♂ and ♀ moths of *Duomitus leuconotus*, Walker, a species of

the family Cossidae which is to be found in Calcutta. Also coloured drawings of the larva, pupa, and moth, and a piece of the stem of *Cassia nodosa*, Ham., showing on the inside the tunnels made in the wood by the larva and on the outside empty pupal cases, from which the moths had escaped, protruding from holes in the bark.

Mr. Stebbing pointed out that the moths exhibited could be easily distinguished from a closely related species *D. stria* by the fact that the latter has a black thorax instead of the snowy white one present in the moths exhibited. The curious point about the moths exhibited was to be found in the relative size of the ♂ and ♀. Hampson in the Fauna gives the spread of wings of the ♀ moth as considerably in excess of that of the male, his measurements being ♂ 98-128, ♀ 180 millims: in the specimens bred out in Calcutta, none of the 32 moths reached these sizes, whilst the smallest ♂ measured had a wing expanse of but 70 millim, that of the smallest ♀ being 77 millim. It is believed that the larva depicted in the coloured drawings is shown to-night for the first time, as no previous record of its ever having been taken or described was discoverable. It will be noted that its colouring is vivid, which is often the case with wood boring moth larvæ, but that it is practically hairless. The larva is only about half-grown and is shown enlarged in the drawing. The pupa, also depicted here for the first time, is also rather remarkably coloured for a moth pupa. The drawing also shows a section through a branch in which is depicted the tunnels made by the larva and the bent position of the pupa at the time the moth escapes from it.

The section of the stem shows the large tunnels made in the wood of the tree by the caterpillar whilst feeding in the trunk, and also numerous empty pupa cases protruding from the bark.

It will be unnecessary to comment upon them further at present since they are fully described and explained in a paper to be read later on at the present meeting.

The following papers were read :—

1. *On General MacLagan's paper about the Jesuit Mission to Akbar.*—By H. BEVERIDGE, I.C.S., (retired).

(Abstract.)

This paper is a supplement to an article by General MacLagan on the three Jesuit Missions to Akbar's court. The author first discusses the references to Akbar's religious reforms found in the Akbar-nāmah, and shows that the date therein given for the visit of Rodolfo Aquaviva, the first Portuguese missionary, must be erroneous. He then refers to another passage in the same work, where it is stated that in 1578 A.D.



a Portuguese arrived from Bengal, whose name is spelt *Partāb Bār* or *Tār*. The author proves that this must have been Pietro Tavares, a Portuguese captain who was at Akbar's court in the same year. Tavares, apparently, deserves the credit of having been the first to introduce Portuguese priests to Akbar. He induced him to send for Egidio or Julian Pereira, the vicar of Sāt-gāon, and then the latter suggested to Akbar that he should send for priests from Goa. It was this which led to Akbar's sending an ambassador to Goa, and to the mission of Rodolfo Aquaviva and his companions. Later on the author gives further reasons in support of General MacLagan's identification of Padre Farmaliūn, another priest mentioned in the Akbar-nāmah, with the Greek Sub-deacon Leon Grimon, who probably reached Goa on his way back to his own country from China and from there went to Akbar's court where he appears to have remained for 13 years.

2. *Some new plants from Eastern Asia.*—By D. PRAIN.

(Abstract.)

This paper contains descriptions of one genus and ten species previously undescribed or imperfectly characterised. They are as follows:—CONVOLVULACEÆ: *Erycibe albiflora* Hallier f.; *E. Henryi* Prain; *E. Forbesii* Prain; *E. leucocoryloides* sp. nov.; *E. sapotacea* Hallier f. and Prain; *E. citriniflora* Griff.; *E. Wallichii* Prain and Hallier f.; *E. magnifica* Prain; *Lettsonia sphærocephala* Prain. LABIATÆ: *Nosema* Prain gen. nov.; *N. capilatum* Prain.

3. *The Tibetan Language and Recent Dictionaries.*—By E. H. WALSH, I.C.S.

(Abstract.)

The paper is divided into two parts. The first part reviews the two Dictionaries that have recently appeared, of the Tibetan Language, namely, the Tibetan-English Dictionary compiled by Rai Sarat Chandra Das Bahadur, and Revised by Rev. G. Sandberg and Rev. A. W. Heyde, and published by the Bengal Government, and the Tibetan-Latin-French Dictionary of the Catholic Missionaries compiled by the Rev. A. Desgodins, published at Hongkong. It reviews the Dictionary of Rai Sarat Chandra Das and compares it with the Dictionary of Father Desgodins and compares them both with the previous Dictionary of Jäschke with regard to the new matter contained by each.

These two Dictionaries have been compiled independently, and from materials collected from independent sources. That of Father Desgodins appeared shortly before that of Rai Sarat Chandra Das, and it would

have been useful if an appendix shewing such words as are found in that Dictionary which do not appear in Rai Sarat Chandra Das's had been added.

In point of new matter Rai Sarat Chandra Das's Dictionary contains much more than Father Desgodins.' The chief difference between them is that Rai Sarat Chandra Das's is primarily a Dictionary of the Literary Language and contains a vast amount of research authorities, and examples from Tibetan writers. It also contains a number of new words of the current colloquial language but unfortunately no distinguishing mark has been made to shew which these are. A feature of the Dictionary is also the Sanskrit synonyms which have been compiled by Pandit Satis Chandra Acharjya. In the case of Desgodins' Dictionary there are also a number of new words, and these are mainly colloquial words, both of the Eastern dialects and of the Central language and Southern dialects. The collection of materials for this Dictionary was commenced by M. Renon, the founder of the French Chinese-Tibetan Mission in 1852, and the missionaries have been collecting and collating material ever since. This accounts for the number of new words probably those in use in the Eastern dialects which the Dictionary contains.

It is a pity that these new words could not have been shewn as an appendix in Rai Sarat Chandra Das's Dictionary. The paper gives a brief review of the history of the Tibetan Literary Language, and points out that the Literary language differs so entirely from the spoken language that it is practically unintelligible to the modern Tibetan, more so than the English of Chaucer would be to the modern Londoner, and that consequently what is now required is a Standard Dictionary of Current and Colloquial Tibetan.

Part II considers the lines on which such a Dictionary should be compiled.

Pandit Satis Chandra Acharjya said that the suggestion that a list shewing the words to be found in Desgodins that do not occur in Rai Sarat Chandra Das's Dictionary, was a good one, and that such a list could still be made and published in connection with the Appendix to the Dictionary of Buddhist terms which he was engaged in preparing.

Rev. Fr. E. Francotte said that it had been Father Desgodins intention to have published his Dictionary in English as well as Latin and French, as making it more generally useful, but this had not been carried out.

4. *An Instance of a Prosthetic g in an Indo-Aryan Language*.—By G. A. GRIERSON, C.I.E., PH.D., D. Litt., I.C.S.

Certain of the Romance languages exhibit a tendency to prefix the letter *g* to words originally beginning with *u* or *v*. Thus,—

Latin, *vado* ; Italian, *guado* ; Provencal, *guá* ; French, *gué*.

Latin, *vagina* ; Italian, *guaina* ; French, *gaine*.

The same peculiarity occurs in Welsh, as in *gweddw* ; Latin, *vidua* ; Sanskrit, *vidhavā* ; a widow.

In Eranian languages we find the same tendency in Balōcī. Thus, Avesta, *vāta* ; Balōcī, *gwāt*, wind : Avesta, *visaiti* ; Balōcī *gīst*, twenty.

(N.B.—Balōcī also prefixes *g* to words beginning with vowels other than *u*).

The same prosthesis explains a form of the pronoun of the third person occurring in the Braj Bhākhā dialect of Western Hindi, which has not hitherto been noted by grammarians. It is prevalent in the district of Aligarh, and the east of the district of Agra, and is *gu* or *gwa*, he, that ; oblique singular, *gwā* ; nominative plural, *gwē* ; obl. plur., *guni* or *gunan*. Connected with it is *gwā* or *ngwā*, there. Examples of its use are,—

*gunan jē kahī*

by-them this was-said, i.e., they said so.

*gunan kahā parihai.*

to-them what will-fall, i.e., what do they care ?

That the *g* in these words is similar to the prosthetic *g* of the Romance languages, Welsh, and Balōcī, is shown by the fact that it is prefixed, in the same locality, to other words beginning with *u*. Thus, *gunnīs*, or *unnīs*, nineteen ; *guntīs*, for *untīs*, twenty-nine ; *guntālīs*, for *untālīs*, thirty-nine *gurancās*, for *uncās*, forty-nine ; *gunhattar*, for *unhattar*, sixty-nine, and so on.<sup>1</sup>

To the south of the area in which Braj Bhākhā is spoken lies the Dāng, or broken country of Kerauli and the east of the Jaipur State. Here we find the prosthetic *g* weakened to *h*, the word for 'he' being *wha* (i.e., *hwa*) or *ū*.

It will have been observed that the Aligarh *gwa* has no final *h*, as there is in the Standard Western Hindi *wah*. If we assume that the Dāngī *hwa* is a weakened form of the Aligarh *gwa*, we find an explanation for the final *h* of *wah*, which would thus be only an instance of metathesis, *wah* and *wha* being the same word. The change was no doubt helped by the fact that the Standard Western Hindi word for 'this,' viz., *vah*, does terminate in an original *h*, being derived from the Apabhram̐ṣa *ēhu*.

5. *On the Life-History and habits of the Moth Duomitius leuconotus*, Walker, in Calcutta.—By E. P. STEBBING.

(Abstract.)

At the last meeting of this Society I read a paper on the life-history of a species of *Arbela* destructive to *Casuarina* plantations in

<sup>1</sup> Mr. Dames informs me that he has heard Mārwarī treasurers also using these forms when counting. I have not found them in any specimens which I have received from Rajputana.

Madras, and exhibited to the Members present at the meetings species of that insect. I pointed out that the habits of the Indian members of the family *Arbelidæ*, and its large and closely related family *Cossidæ* were almost unknown, neither the larvæ, which are wood feeders and live in trees, nor pupæ of the greater number of described species being known. Since that meeting I have been able to carry out a series of observations on the life-history of a member of the *Cossidæ*, a family known to many in England owing to the abundance of the common red Goat moth caterpillar which riddles elms and willows throughout the country. In India the life-histories of two representatives of the family are known owing to their economic importance. These are *Duomitus nigar* the 'Black borer,' and *Zeuzera coffeæ* the Red 'borer' of the Planters in Southern India. Both are pests in coffee plantations. The moth whose life-history this paper deals with bears the name of *Duomitus leuconotus*, Wlk., and specimens of the various stages in its life-history have been already exhibited to Members.

The paper points out that the measurements of the Calcutta specimens of the moth taken this year differ from those given in Hampson's Moths in the Fauna of British India, males in the case of the Calcutta specimens, being as much as 28 millims less than the sizes quoted by Hampson, whilst in the females the disparity is very much greater, the smallest female measured having a wing expanse of 103 millims less. Technical descriptions are given of the larva and pupa which, it is believed, have never before been figured or described.

The moths appear on the wing in the latter half of September, and are to be found during the remainder of that month and up to about the third week in October. They are extremely sluggish during the daytime but are exceptionally powerful fliers at night. The ♂ lives but a few days and dies after pairing with the ♀. The latter lays eggs shortly after pairing and dies as soon as she has finished ovipositing. The eggs are laid on the bark. The larvæ on hatching out bore into the tree and spend this stage of their existence tunneling in and feeding on the wood. It is probable that nearly two years, if not more, are passed in this stage. When full fed the larva carries its tunnel to the outside, eating through the bark and ejecting the wood refuse so that the latter part of its tunnel is quite clean, the rest being blocked by its excrement and wood particles. Having thus provided for the escape of the pupa it backs down its tunnel for about 3 inches and pupates. A short time only is spent in this stage. When the moth is ready to emerge, the pupa wriggles up the tunnel to the outside until it projects half of its length beyond the bark. The pupal skin then splits down anteriorly and the moth crawls out.

The insect commits serious damage to *Cassia nodosa*, Ham., a tree of this species in the Indian Museum compound having been killed this year by the larvæ, between 30 and 40 moths being obtained from it.

The President asked whether the presence of immature larvæ at the time when the moths were maturing and issuing indicated that the larvæ spent more than one year in that stage of their existence. Mr. Stebbing replied that although this would not be so in the case of an insect which passed through several generations in the year, which generations might overlap so that at any one time eggs, larvæ pupæ, and mature insects would be found together; yet in the case of an insect of which adults only appeared once in the year the presence of half-grown larvæ would indicate the probability of more than a year being passed in that stage.

The Rev. Fr. Francotte asked whether the larvæ depicted in the coloured illustrations were natural size or enlarged. He pointed out that the larvæ of the Goat moth which riddled willow trees in England were 4 inches in length. Mr. Stebbing explained that the larvæ illustrated were half-grown ones enlarged. That it was probable that they exceeded the Goat moth larva in size when fullgrown. In reply to a query from Rev. Fr. Francotte as to whether this was the largest Indian Cossid known, Mr. Stebbing replied that there was one other, a closely allied species *Duomitus striatæ*, Cram. which was usually larger.

6. *Some notes concerning the people of Mungeli Tehsil, Bilaspur District.*—  
By The Rev. E. M. GORDON.

(Abstract.)

These notes are a continuation of a series of similar notes by the same author which were published in the Society's Journal, Part III, No. 2, of 1902.

They give a number of interesting examples of the Folklore and Customs of the people of the Mungeli Tehsil, also one of their songs, and a number of stories.

Some of the items of folklore, such as their aversion to spilling or passing salt, and their beliefs about the howling of dogs are interesting on account of their counterpart to current beliefs elsewhere.

Mr. McMinn pointed out that though not so stated in the paper, these beliefs and customs were probably those of particular castes, and must not be taken as generally prevalent throughout the Mungeli Tehsil with which he was well acquainted.

7. *A note on Stone Implements found in the Darjeeling District.*—By E. H. WALSH, I.C.S.

(Abstract.)

The paper describes a collection of stone implements found in the Darjeeling District (which were also exhibited) and points out that they are everywhere believed to be thunderbolts, the weapons of the gods, and to possess various protective and medicinal powers, and expresses the opinion that some of them are modern forgeries, made by the medicine-men, with whom they are generally found, and who find it necessary to have one to use as a charm, or rub it in water for medicine. The axe-heads exhibited also included for comparison, some the Shan States of Upper Burma.

8. *The Tibetan Game of De Sho.*—By E. H. WALSH, I.C.S.

(Abstract.)

The paper describes this game and gives as an example a game as actually played through. The game is played by three players with dice which are thrown in a small wooden bowl on to a round leather cushion, and in the method of play the game bears certain resemblances to backgammon though differing entirely in other respects.

Each player has nine counters called "dogs" and it is his object to collect as many of these as he can to form a pack at one point, as he can then "kill" any smaller pack of his adversaries at any other point, that he can reach by the throw of the dice which puts those dogs so killed out of play and they have then to start the round again from the beginning.

The winner is the one who gets all his "dogs" through first. There is considerable skill in playing the game well.

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PROCEEDINGS  
OF THE  
ASIATIC SOCIETY OF BENGAL.

FOR DECEMBER, 1903.

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The Monthly General Meeting of the Society was held on Wednesday, the 2nd December, 1903, at 9 P.M.

THE HON'BLE MR. A. PEDLER, C.I.E., F.R.S., in the chair.

The following members were present :—

Dr. A. S. Allan, Mr. J. Bathgate, Mr. I. H. Burkill, Dr. A. Caddy, Mr. F. Doxey, Mr. T. D. Edelston, Revd. E. Francotte, S. J., Mr. T. H. Holland, Mr. D. Hooper, Mr. H. E. Kempthorne, Mr. W. A. Lee, Mr. J. Macfarlane, Dr. M. M. Masoom, Mr. W. H. Miles, Mr. C. W. McMinn, Major D. Prain, I.M.S., Pandit Yogesa Chandra Sastree, Dr. C. Schulten, Pandit Satis Chandra Vidyabhushan, Mr. D. R. Wallace, Dr. C. R. Wilson, Mr. J. Wyness.

*Visitors* :—Dr. F. Alffers, Syed Ameer Ali, Mr. C. Anninos, Miss Devereux, Mr. W. Dods, Mr. and Mrs. C. A. Giannacopolo, Mr. and Mrs. N. Giannacopolo, Mr. V. H. Jackson, Mrs. Kempthorne, Mr. H. D. Lindquist, Mr. J. W. Meares, Mr. H. K. Scott, Mr. E. D. Zalichi.

The minutes of the last meeting were read and confirmed.

Forty-four presentations were announced.

It was announced that Mr. A. B. Miller had expressed a wish to withdraw from the Society.

The Chairman announced :—

1. That Dr. E. D. Ross had kindly undertaken to carry on the duties of the Philological Secretary of the Society during the absence of Dr. T. Bloch, on tour.

2. That Captain L. Rogers, I. M. S., had been appointed Natural History Secretary of the Society, *vice* Mr. E. P. Stebbing, resigned.

3. That Dr. E. D. Ross had been appointed Anthropological Secretary of the Society, *vice* Mr. E. H. C. Walsh, resigned.

Mr. T. H. Holland exhibited a meteorite which fell with the meteor seen in Eastern Bengal on October 22nd.

The stone weighs 622 grammes and is covered with a thin black crust formed by the fusion of the rock during its rapid flight through the air. Several stones were known to have fallen with this meteor, and the complete investment with fused crust of the one exhibited shows that fusion of the surface occurred after the break-up of the meteorite. Besides the complete proof that the meteor resulted in an actual fall of stones, special interest attaches to this occurrence on account of the observations made from so many points of view, permitting Mr. Little to calculate its actual path and speed.

Mr. T. H. Holland also exhibited some crushing mills used by ancient gold miners in Chota Nagpur.

Grooved stones and ground pebbles occur by the thousand in the jungles of Singhbhum district, where apparently they were used by a past and unknown generation of gold miners. The rounded pebbles and the larger grooved stones appear to have performed the functions respectively of pestle and mortar, although nothing of the kind is now known in use, and no tradition is known locally of the work done by the people of the past. Judging by the great numbers of these stones in Singhbhum, prospecting operations must have been carried on on a large scale; but, like the miners who attempted to boom this area 12 years ago, the ancient workers did not apparently obtain sufficient inducement to develop deep workings.

Mr. E. Vredenburg, of the Geological Survey, exhibited specimens of sodalite from Kishengarh, having an unexplained property of changing its colour.

The sodalite was obtained in Kishengarh, Rajputana, with the comparatively rare group of rocks known as *eleolite-syenites*. Besides the deep-blue and usual variety of sodalite, one form when freshly broken has a carmine colour. The carmine colour, for some unexplained reason, disappears after a few seconds' exposure to direct sunlight, or after a few minutes in a bright electric light, recovering its colour again when kept in darkness for about a fortnight. Whilst the fading of coloured minerals is rare, the recovery of colour in this way is without

parallel amongst minerals; and, in view of the fact that the association is just that of the rarer earths, it is not unnatural to suspect the existence of some phenomenon akin to the forms of fluorescence and radio-activity which have recently attracted so much attention.

The General Secretary exhibited a spiral ring dug up at Alladand in Swat by a burial party, received from Major S. H. Godfrey, I.A., Political Agent, Dir, Swat, and Chitral.

The chief interest of this ring appears to lie in the story current among the people that the idol worshippers who were displaced by the Muhammadans wore similar rings, and the legend that the Kafirs of Kafiristan are the direct descendants of the former inhabitants of Swat.

The women of Kafiristan to this day wear iron coil ornaments on their headdress of the shape of this gold plated spiral ring. It has been somewhat damaged by incisions doubtless made at the time it was exhumed to ascertain whether the gold was solid.

The following papers were read:—

1. On 'Īsā Khān, the ruler of Bhātī in the time of Akbar.—By H. BEVERIDGE, I.C.S. (retired).

(ABSTRACT.)

The history of 'Īsā Khān has already been noticed by Dr. Wise in his valuable account of the Bārā Bhūyas of Eastern Bengal published in 1874. The object of Mr. Beveridge's present paper is to add some particulars about 'Īsā Khān taken from the third volume of the Akbarnāma a source not directly consulted by Dr. Wise. The Akbarnāma it may be observed appears to have been written after the Āin, for in the Āin, 'Īsā is incorrectly called 'Īsā Afghan, whereas the Akbarnāma, agreeing with the family tradition as reported by Dr. Wise, correctly states that 'Īsā's father was a Rājput of Bāiswāra in Oudh whose name was Kālī Dās Gajdānī. In the reign of Salīm Shāh, the son of Sher Shāh, Kālī Dās who had settled in the fluviatile region of Bengal rebelled, and was eventually by stratagem made prisoner and put to death. According to the family tradition Kālī Dās became a Muhammadan before his death and received the title of Shāhaimān Khān. But this cannot have been the case as his two sons 'Īsā and Ishmael were sold as slaves and carried off into Central Asia. On the death of Salīm Shāh, in 1554, their uncle, after much searching, found them and brought them back to Bengal. Īsā by his ability and prudence rose to be the chief of the bārā bhūyas or twelve zemindars of Bengal. Ruler of Bhātī, he professed submission the higher rulers of Ben-

gal, Sulaiman Kararānī and Dāūd; but he had the good sense to keep aloof from them. Bhāti seems roughly to correspond with the districts of Dacca and Maimansingh. Khizrpūr on the Ganges is described as the thoroughfare to and from Bhāti. Sonārgāon and Agara Sindur on the old Brahmaputra were important cities. 'Īsā's residence is said to have been at the populous city of Katrābuh which may be identified with Katibārī near Sābhār in the Mānikganj sub-division where there is still a tappa called Kāthorābo. Abul Fazl describes in detail the campaigns of the imperial general Shāhbāz Khān against 'Īsā in 1584 and 1585. There are also some nine other references to 'Īsā in the third volume of the Akbar-nāma, and we are told more than once of his making submission and sending presents. But he was never really subdued. His swamps and creeks enabled him to preserve his independence as effectually as the Aravalli Hills protected Rānā Pratāp of Udaipur. 'Īsā's death took place in 1599–1600 in the 44th year of Akbar's reign. His son Dāūd, according to Abul Fazl, gave Mān Singh some trouble. Ralph Fitch who was at Sonargaon about 1586 mentions 'Īsā Khān as 'the chief king of all these countries,' and 'a great friend to Christians.' Mr. Gait in his paper on the Koch kings of Kāmārūp, published by the Society in 1893, tells us that Rajah Nar Narayan of Kuch Bihar conferred with the Emperor Akbar to attack 'the Gaur Pāsha' who was defeated and had to fly to the Faringhis. Mr. Beveridge suggests that 'the Gaur Pāsha' of the Kuch Bihar records is 'Īsā Khān.

2. *Noviciæ Indicæ XXI.—An undescribed Indian Musa*—By D. PRAIN.

(ABSTRACT.)

Three years ago, a native collector in the service of the Royal Botanic Garden, Shibpur, sent to Calcutta the rootstocks of a *Musa* from the Jaboca Naga country. The plant has thriven well and has recently flowered. It proves to be a new species, belonging to the section *Eumusa*, and is now described under the name *Musa nagensium*.

3. *The Later Mughals (1707–1803)*.—By WILLIAM IRVINE, I.C.S., (retired).

(ABSTRACT.)

Mr. Irvine's paper is a continuation of his previous contributions on the subject of the Later Mughals which have been published in the Society's *Journal*, Part I, in 1896, 1898, and 1903. It completes the story of the reign of the worthless Farrukhsiyar and shows how his various ill-conceived ill-executed attempts to free himself from the two

Sayyads recoiled on his own head and led to his deposition and death. The narrative extends to twenty-three carefully written sections.

Undeterred by the failure of his plot to get Husain 'Ali destroyed by Dāūd Khān in 1715, a piece of treachery which the two Sayyad brothers never forgot or forgave, Farrukhsiyar continued to intrigue against them with every likely person he could think of. But as he was at once suspicious and faithless he failed to rally anyone of any importance to his side. It was probably by the emperor's orders that his favourite Mir Jumlah ventured to return to Delhi in 1716, but, when the *wazīr* Quṭbu-l-mulk remonstrated, the emperor took fright and sent peremptory orders to Mir Jumlah to withdraw to Lāhor. Mir Jumlah's troops were then secretly encouraged to mutiny in the hope that they might attack Quṭbu-l-mulk, but as this plot too failed to take effect, the emperor professed to be very angry with Mir Jumlah, deprived him of all his titles and offices, and forced him to leave for Lāhor at once.

It occurred to Farrukhsiyar that it had been a mistake to remove all the old officials, who would have furnished a useful counterpoise to the overwhelming influence of the Sayyads. In this view he reappointed 'Ināyatullah Khān on his return from Makka *diwān* of the *khāleshah* and the *tan* and also governor of Kashmīr. 'Inayatullah's attempts to reform the Treasury only annoyed the *wazīr* who was lazy and slack, and the corrupt Hindu officials who were enriching themselves with his connivance. The new *diwān* made himself particularly unpopular by reimposing the *jazīyah* and by reviving the rules of 'Ālam-gīr. In the same way other officials of the old school were appointed to various positions of trust, but it was soon clear to the emperor that they would be no sufficient counterpoise to the power of the *wazīr*.

Farrukhsiyar now changed his plans and made what was perhaps the greatest mistake of his life. He chose a new favourite Muhammad Murād, Kashmīrī, I'tiqād Khān, whom he loaded with honours and clung to as the right man for any desperate undertaking. The sudden elevation of Murād gave offence to friends and foes alike and was one source of strength to the emperor, for Murād was a braggart and a coward and afraid to take any steps against the *wazīr*. Under the advice of I'tiqād Khān the emperor had recourse to Sarbuland Khān, who did not consider it worth his while to attack Quṭbu-l-Mulk unless he became *wazīr* instead; then to Ajit Singh, who at once went over to the opposite side; and then to Nizāmu-l-mulk who suggested the recall of his cousin Muḥammad Amin Khān.

At last the patience of the Sayyad brothers gave way. Husain 'Ali

returned to Delhi and the Sayyad adherents took possession of the place. They expected that Farrukhsiyar would now be a mere puppet in their hands. But Farrukhsiyar was obstinate and refused to move according to their directions. There was nothing for it but to depose Farrukhsiyar and bring out one of the imprisoned scions of the house of Taimur and place him on the throne. Accordingly on February 28th, 1719, Rafi'u-d-darajāt, the youngest of the three sons of Rafi'u-sh-shān, was taken just as he was found in his ordinary clothes with a string of pearls round his neck, and was seated straightway by the *wazīr* and Ajit Singh on the jewelled peacock throne in the *diwān-i-'ām*. Farrukhsiyar was seized, blinded and imprisoned in the room over the Tirpoliyā or triple gate within the fortress. After an imprisonment of two months, during which he seems to have been treated with unnecessary harshness, he was put to death on the night of April 27th, 1719.


Mr. Irvine cannot hold it wrong to have removed from power such a worthless thing as Farrukhsiyar. Nor does he think that the Sayyads were specially to blame for blinding him, which was the usage of the day. He condemns the excessive strictness of the confinement and the execution. The most prominent element in Farrukhsiyar's character was weakness. He was strong neither for evil nor for good. He might have shown himself amiable and inoffensive, leaving his powerful ministers to take their own course. He might have got rid of them at the earliest possible moment after his accession, following the example of many of his illustrious predecessors. But Farrukhsiyar was not morally strong enough to do anything decisive. Consequently for seven years the Government was in a condition of unstable equilibrium. In private life he was profuse and liberal, which made him the darling of the lower orders. He loved fine clothes and good horses. He was passionately fond of wrestling, archery, horsemanship, hunting, polo-playing, and other soldierly exercises, and was physically a fine man. Mr. Irvine believes that the date of his birth was the 19th Ramaẓān, 1094 H. He proclaimed himself emperor at Patna on the 29th Šafar, 1124 H. or March 6th, 1712. The only well-known edifice constructed in his reign was a third arch of marble to the mosque at the Quṭb, added in 1130 H.

4. *Noviciae Indicæ XXII. An undescribed Araliaceous genus from Upper Burma*—By D. PRAIN.

(ABSTRACT.)

Among the plants obtained by a native collector of the Royal Botanic Garden, Calcutta, while working in the Kachin Hills under the kind supervision of Lieutenant Cruddas, S.C., Commandant of the Military

Police Battalion at Myitkyina, one of the most striking is a hitherto uncharacterised Araliacen plant which cannot be referred to any known genus of the order. It is accordingly made the type of a new genus *Woodburnia*, dedicated to the memory of our lamented former President, H.H. Sir John Woodburn, K.C.S.I. The species *W. floribunda* exhibits the character, unusual in the order, of having simple umbels, and has the further unusual feature of remarkably large flowers.







## LIBRARY.

THE following books have been added to the Library during the half year ended 30th June, 1903:—

**Abinas Chandra Das.** *The Vaisya Caste, etc. Calcutta, 1903, etc.* 8°.

*In progress.*

*Presd. by the Author.*

**Asutosh Mukhopadhyay.** *The Law of Perpetuities in British India. Calcutta, 1902.* 8°.

*Tagore Law Lectures, 1898. Presd. by the Calcutta University.*

**Balgobind.** *The Life of Raja Sir Shamshere Prakash, G.C.S.I., of Simour. [With a portrait.] Calcutta, 1901.* 8°.

**Bamber (M. Kelway).** *Report on Ceylon Tea Soils and their effects on the quality of tea. Calcutta, 1900.* 8°.

**Blanford (W. T.)** *Notes on Mr. W. M. Daly's Collection of Land and Fresh-water Mollusca from Siam. [London, 1903.]* 8°.

*From the Proceedings of the Malacological Society.*

*Presd. by the Author.*

**Bower (A. G.)** *The Family History of the Bansberia Raj. Edited by A. G. Bower. Calcutta, 1896.* 8°.

*Presd. by Rajah Satindra Deb Rai Mahashaya.*

**British Museum.** (*Natural History*). *Handbook of Instructions for Collectors, etc., London, 1902.* 8°.

———. *Report on the collections of Natural History made in the Antarctic Regions during the voyage of the "Southern Cross." London, 1902.* 8°.

———. *Guide to the Coral Gallery—Protozoa, Porifera or Sponges, Hydrozoa, and Anthozoa—in the...British Museum...With...illustrations. [London,] 1902.* 8°.

*Presd. by the British Museum.*

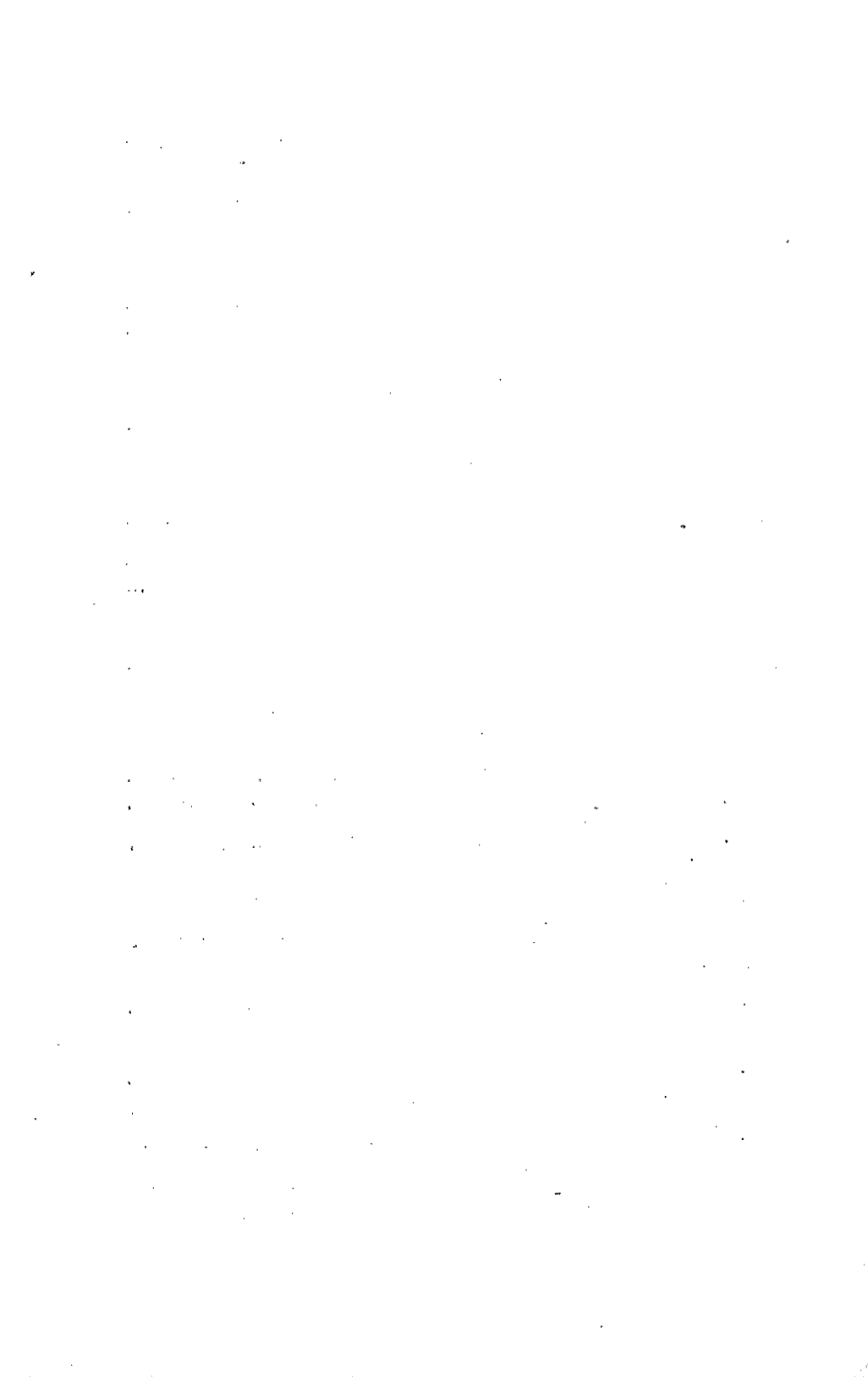
**Browne (Edward G.)** *A Literary History of Persia from the earliest times until Firdawsi. London, 1902.* 8°.



- Bühler ( )** The Sukritasamkirtana of Arisimha. Translated...by E. K. Burgess, *etc.* Bombay, 1903. 4°. *Reprinted from the Indian Antiquary.* *Presd. by Dr. J. Burgess.*
- Busteed (H. E.)** Echoes from Old Calcutta: being chiefly reminiscences of the days of Warren Hastings, Francis and Impey... Third edition. Calcutta, 1897. 8°.
- Collett (Colonel Sir Henry).** Flora Simlensis. A handbook of the flowering plants of Simla and the neighbourhood...With an introduction by W. B. Hemsley...illustrations...and a map. London, 1902. 8°.
- Congrès International des Etudes d'Extrême-Orient.** Compte rendu analytique des séances. Hanoi, 1903. 4°. *Presd. by the Ecole Française d'Extrême-Orient. Saigon.*
- Cranenburgh (D. E.)** The Calcutta Municipal Act, being Ben. Act III of 1899, with a digest of rulings under the Repealed Act and a copious index. By D. E. Cranenburgh. Calcutta, 1900. 8°.
- Crawford (Lieut.-Col. D. G.)** A Brief History of the Hughli District. Calcutta, 1903. 4°. *Presd. by the Inspector-General of Civil Hospitals, Bengal.*
- Daljit Singh, Sirdar.** Srimad Edward Ráj Abhikhek. The Coronation of the Emperor Edward VII. A Gurmukhi poem set to music with an English translation. Lahore, 1902. 8°. *Presd. by the Author.*
- Ernest (R.)** Buddhism and Science.. Rangoon. [ ] 8° *Presd. by the Author.*
- Ferrars (Max.) and (Bertha).** Burma...Second edition. London, 1901. 4° *Presd. by the Government of Burma.*
- Finn (Frank).** How to know the Indian Ducks. Calcutta, 1901. 8°.
- Flasch (Adam).** Heinrich von Brunn. Gedächtnissrede, *etc.* München, 1902. 4°. *Presd. by the K. b. Akademie der Wissenschaften zu München.*
- The Gazetteer of Sikkim.** With an introduction by H. H. Risley. Edited in the Bengal Government Secretariat. Calcutta, 1894. 4°. *Presd. by the Government of Bengal.*



- Hill (S. C.)** The Life of Claud Martin, Major-General in the Army of the Honourable East India Company. *Calcutta*, 1901. 8°.
- Hirschfeld (Hartwig)** New Researches into the Composition and exegesis of the Qoran. *London*, 1902. 4°. *Asiatic Monographs, Vol. 3.*
- Kâlidâsa.** The Raghuvanṣa...Translated by P. De Lacy Johnstone. *London*, 1902. 8°. *Presd. by the Translator.*
- Kotô (B.) and Kanazawa (S.)** A Catalogue of the romanized geographical names of Korea. [*Tôkyô*, 1903.] 8°. *Presd. by the Tokyo Imperial University.*
- Lingum Letchmajee.** An Introduction to the Grammar of the Kui or Kandh language... Second edition. Revised and corrected. *Calcutta*, 1902. 8°. *Presd. by the Government of Bengal.*
- Mukerji (S. C.)** A short account of the Sudramani Rajas...Revised by A. B. Wann...With illustrations by Major G. E. Weigall... With a note on the temple of Hamsesvari by P. C. Mookerji...Second edition. [*Calcutta*,] 1902. 8°. *Presd. by Rajah Satindra Deb Rui Mahashaya.*
- Murdoch (John)** The Call of the Twentieth Century to Awakened India, etc. *Madras*, 1902. 8°.
- . Suggested Triad of Coronation boons to India...A letter, etc. *Madras*, 1903. 8°. *Presd. by the Author.*
- Nidhâmi-i-'Arûdi-i-Samarqandî.** The Chahâr Maqâla...Translated... by Edward G. Browne. *Hertford*, 1899. 8°. *Reprinted from the Journal of the Royal Asiatic Society.*
- Nishikanta Chattopâdhyâya.** Mricchakatikâ मृच्छकटिका...A Study *Mysore*, 1902. 8°.
- . Reminiscences of the late Justice Ranade. A lecture, etc. [*Mysore*, 1901.] 8°.
- . Some Reminiscences of Old England. A lecture, etc. [*Mysore*, 1902.] 8°.
- . The Study of History. A lecture, etc. [*Mysore*, 1902.] 8°.
- . The True Theosophist. A lecture, etc. [*Mysore*, 1892.] 8°. *Presd. by the Author.*



- Nitya Gopal Mukerji.** Handbook of Indian Agriculture. *Calcutta*, 1901. 8°.
- Ponder (C. F.) and Hooper (D.)** An Introduction to Materia Medica for India, etc. *Calcutta*, 1901. 8°.
- Praphulla Chandra Rāy.** A History of Hindu Chemistry, etc. *Calcutta*, 1902, etc. 4°. *In progress.*
- Ross (E. Denison) and Browne (Edward G.)** Catalogue of two Collections of Persian and Arabic manuscripts preserved in the India Office Library. *London*, 1902. 8°.  
*Presd. by the Government of Bengal.*
- Royal Asiatic Society.** A Catalogue of South Indian Sanskrit Manuscripts—especially those of the Whish Collection—...Compiled by Dr. M. Winternitz...With an appendix by F. W. Thomas. *London*. 1902. 8°.  
*One of the "Asiatic Society Monographs."*
- Sarat Chandra Das.** A Tibetan-English Dictionary with Sanskrit Synonyms...Revised and Edited...By Graham Sandberg...and A. William Heyde. *Calcutta*, 1902. 4°.  
*Presd. by the Government of Bengal.*
- Sarat Chandra Mitra.** Note on the Sword-blade Vow and Bihâri Folk-tales of the "Man und Fuchs" Type. Two papers, etc. *Bombay*, 1902. 8°.  
*From the Journal of the Anthropological Society of Bombay.*  
*Presd. by the Author.*
- Seward (A. C.) and Arber (E. A. N.)** Les Nipadites des couches éocènes de la Belgique. *Bruxelles*, 1903. 4°  
*Extrait des Mém. du Musée roy. d'Hist. Nat. de Belgique.*  
*Presd. by the Musée Royal d'Histoire Naturelle de Belgique.*
- Sharpe (Wm.)** The Dual Image. A Mystical poem of life. Revised edition. *London*, 1902. 8°.  
*Presd. by the Author.*
- . Ideal Gods, and other essays and poems, etc. *London*, 1900. 8°.  
*Presd. by the Author.*





**Teixeira (Pedro).** The Travels of Pedro Teixeira: with his "Kings of Harmuz" and extracts from his "Kings of Persia." Translated...by W. F. Sinclair...With introduction by D. Ferguson. London, 1902. 8°. *Works issued by the Hakluyt Society. Ser. II, No. 9.* *Presd. by the Government of India, Home Dept.*

**Tilly (Harry L.)** Glass Mosaics of Burma. With photographs. Rangoon, 1901. fol.

**U Gaung.** Translation of a Digest of the Burmese Buddhist Law concerning inheritance and marriages...Compared and arranged under the supervision of U Gaung, etc. Vol. I. Inheritance. Rangoon, 1902. 4°. *Presd. by the Government of Burma.*

**Vaughan (General Sir John L.)** A Grammar and Vocabulary of the Pushtū language...Second edition. Calcutta, 1901. 8°.

**Vidyaranya Swami, \*Sreemut.** A Handbook of Hindu Pantheism. The Panchadasi...Translated with copious annotations by Nandalal Dhole...Second edition. 2 vols. Calcutta, 1899, etc. 8°.

**Wilkins (W. J.)** Modern Hinduism: an account of the religion and life of the Hindus in Northern India. Second edition, London, [1900.] 8°.





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THE following books have been added to the Library during the months of July and August 1903 :—

**Abu Othman Amr Ibn Bahr Al-djahiz Basrensis.** *Tria Opuscula auctore Abu Othman Amr Ibn Bahr Al-djahiz Basrensi quae edidit G. van Vloten. Lugduni Batavorum, 1903. 8°.*

*Presd. by the University of Leyden.*

**Albemarle, Earl of.** *The Albemarle Papers. Being the correspondence of William Anne, Second Earl of Albemarle . . . With an appendix of letters from Andrew Fletcher, Lord Justice-Clerk, to the Duke of Newcastle, 1746-1748. Edited with introduction . . . by C. S. Terry. 2 vols. Aberdeen, 1902. 4°.*

*Aberdeen University Studies, No. 7.*

**Anderson (Peter John)** *Rectorial Addresses delivered in the Universities of Aberdeen, 1835-1900. Aberdeen, 1902. 4°.*

*Aberdeen University Studies, No. 6.*

*Presd. by the Aberdeen University.*

**Appaya Dikshita.** *Kuvalayānanda Kārikās or the Memorial verses of Appaya Dikshita's Kuvalayānanda. Edited and explained with an English tika commentary and translation . . . by P. R. Subrahmanya Sarmā. Calcutta, 1903. 8°.*

*Presd. by the Editor.*

**Bhârata-Yuddha.** *Oudjavaansch—Heldendicht uitgegeven door Dr. J. G. H. Gunning. [Text] 's-Gravenhage, 1903. 4°.*

*Presd. by the Koninklijk Instituut voor de Taal-, Land-en Volkenkunde van Nederlandsch Indië.*

**British Museum.** *Catalogue of the Sanskrit Manuscripts in the British Museum. By C. Bendall. London, 1902. 4°.*

*Presd. by the Trustees of the British Museum.*

**Castanhoso (Miguel de)** *The Portuguese Expedition to Abyssinia in 1541-1543 . . . With some contemporary letters, the short account of Bermudez, and certain extracts from Correa. Translated and edited by R. S. Whiteway. [With a bibliography of Abyssinia.] London, 1902. 8°.*

*Hakluyt Society's Publication, 2nd Series, No 10.*

*Presd. by the Government of India, Home Department.*



**Garrett (A.)** Notes on the Caves of Udayagiri and Khandgiri.  
[Calcutta, 1902.] Fol.

*Presd. by the Government of Bengal.*

**Ghulam Husain Khān, Sayid.** A Translation of the Sēir Mutaqherin :  
or View of modern times, being an history of India from the year  
1118 to the year 1194 . . . of the Hedjrah ; containing the reigns of  
the seven last Emperors of Hindustan, and . . . an account of the  
English Wars in Bengal . . . down to the year 1783, etc. [Trans-  
lated by — Raymond, afterwards called Haji Mustafā.] 4 vols.  
Calcutta, [1902.] 8°.

**Hoffmann (Rev. J.)** Mundari Grammar. Calcutta, 1903. 8°.

*Presd. by the Government of Bengal.*

**Jackson (Lieut. R. P.)** Historical Records of the XIII Madras Infan-  
try. [London,] 1898. 8°.

*Presd. by the XIII Madras Infantry.*

**Muralidhur Roy.** Sree Krishna, etc. Calcutta, 1901. 8°.

*Presd. by the Author.*

**Newman (W.) & Co.** Newman's Guide to Darjeeling and its surround-  
ings, . . . With a chapter on Tibet and the Tibetans. Illustrated.  
Calcutta, 1900. 8°.

**Polo (Marco.)** The Book of Ser Marco Polo . . . translated and edited  
. . . by Col. Henry Yule . . . Third edition, revised throughout  
. . . by Henri Cordier, etc. 2 vols. London, 1903. 8°.

**Pratt (H. S.)** Monograph on Ivory Carving in Burma. (With a  
plate.] Rangoon, 1901. 8°.

**Rājaṣekhara.** Rāja-Ṣekhara's Karpūra-mañjarī. A drama . . .  
edited in the original Prākṛit, with a glossarial index, and an  
essay on the life and writings of the poet by S. Konow . . . Transla-  
ted into English with notes by C. R. Lanman. Cambridge, Mass.  
1901. 8°.

*Harvard Oriental Series, vol. IV.*

*Presd. by the Harvard University.*

**Rammohun Roy, Raja.** The English Works of Raja Rammohun Roy.  
Edited by Jogendra Chunder Ghose. 3 vols. Calcutta, 1901. 8°.

**Ranade (M. G.)** Rise of the Maratha Power. Bombay, 1900. 8°.

**Stebbing (E. P.)** A note on the Sandal wood boring insects of Madras.  
Calcutta, 1903. 8°.



**Stebbing (E. P.)** Insect pests of the Sugarcane in India. [*Calcutta*, 1903.] 8°.

*Extract from Indian Museum Notes, vol. V, No. 3.*

*Presd. by the Author.*

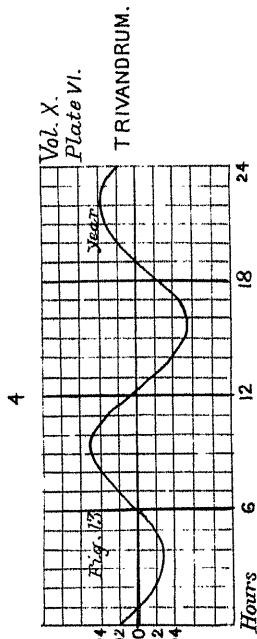
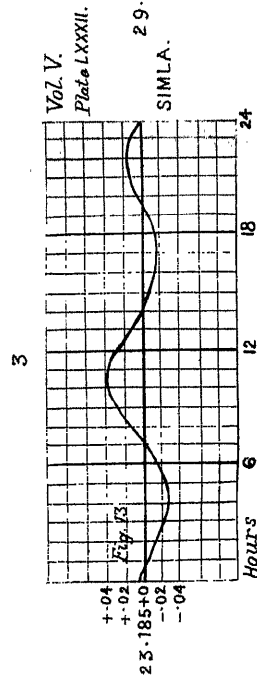
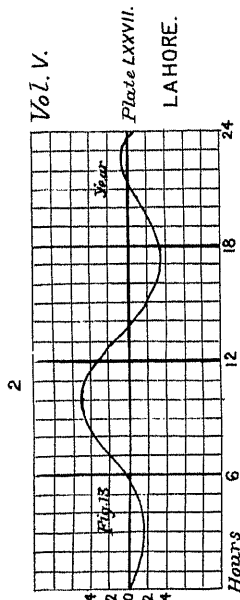
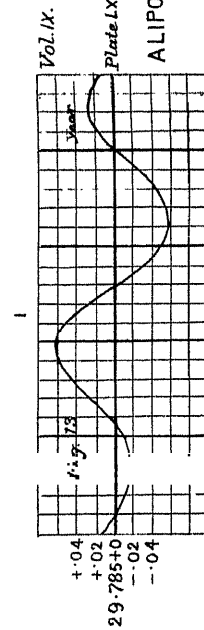
**Yule (Col. Henry) and Burnell (A. C.)** Hobson-Jobson: a glossary of Colloquial Anglo-Indian words and phrases . . . New edition, edited by W. Crooke. *London*, 1903. 8°.

**Zoological Society of London.** Catalogue of the Library of the Zoological Society of London. Fifth edition. *London*, 1902. 8°.

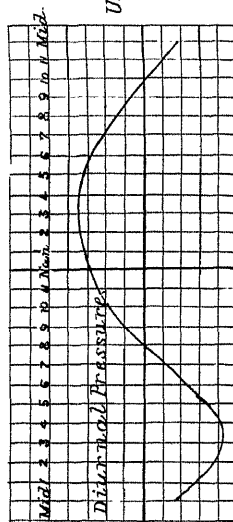
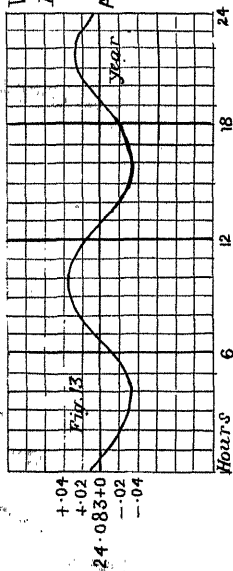
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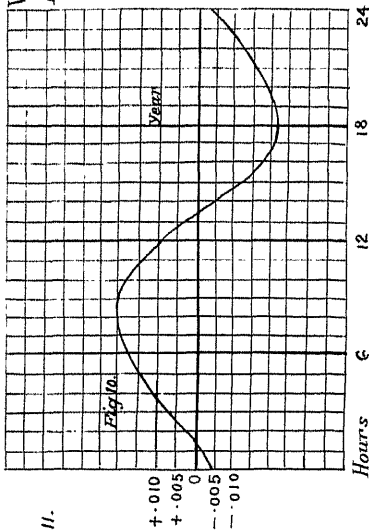


Vol. X.  
Plate XXVII.



U.S. Weather Review.

Vol. VI.  
Plate LXXVII.  
Diff. between  
LAHORE & SIMLA.



The numbers to the right of the diagrams refer to the "Indian Meteorological Memoirs."



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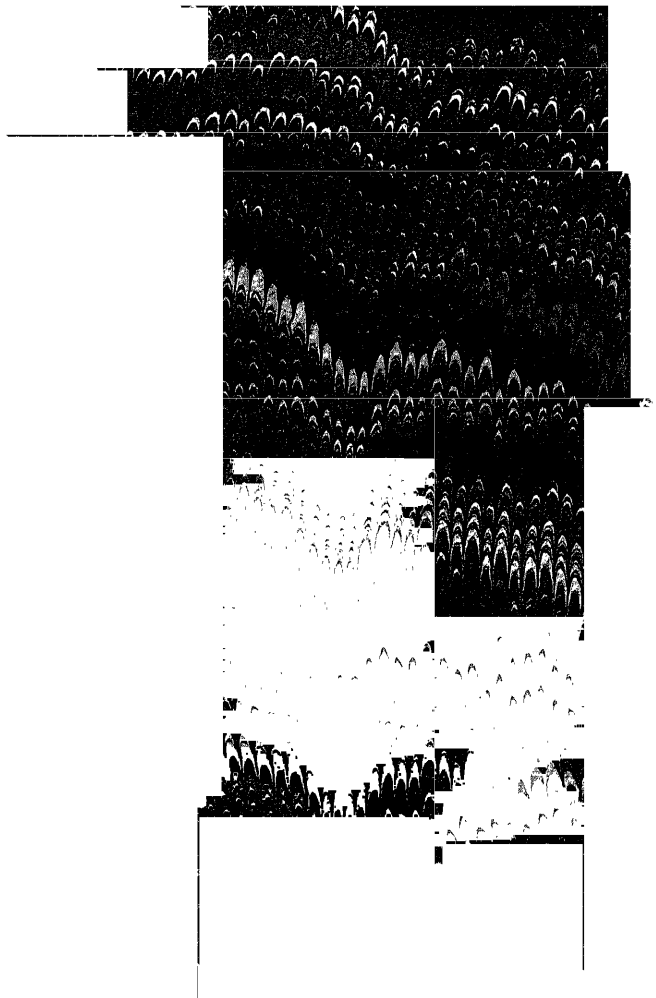






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